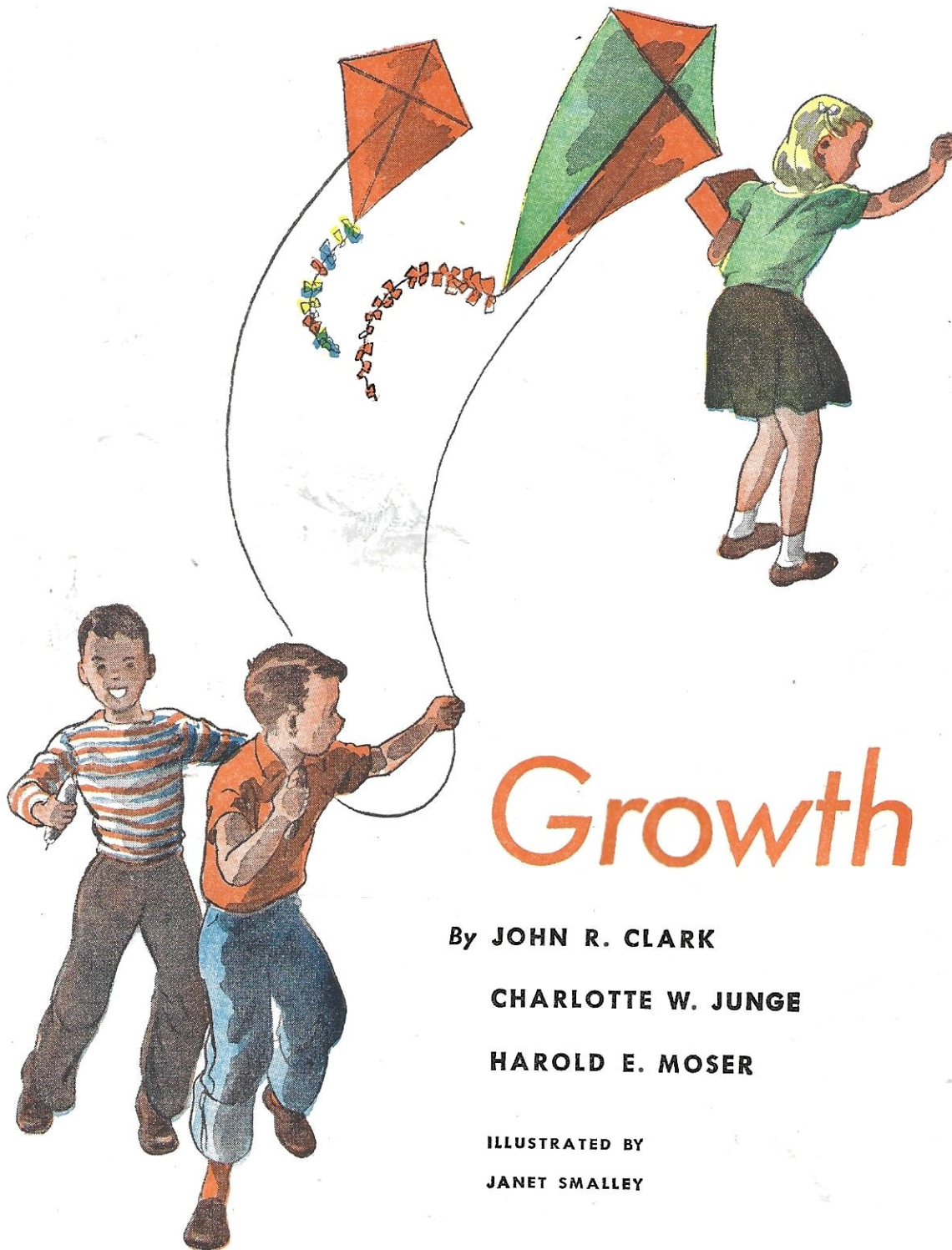


GROWTH *in*

3

ARITHMETIC





Growth

By JOHN R. CLARK

CHARLOTTE W. JUNGE

HAROLD E. MOSER

ILLUSTRATED BY
JANET SMALLEY

3



in Arithmetic

GRADE THREE

World Book Company

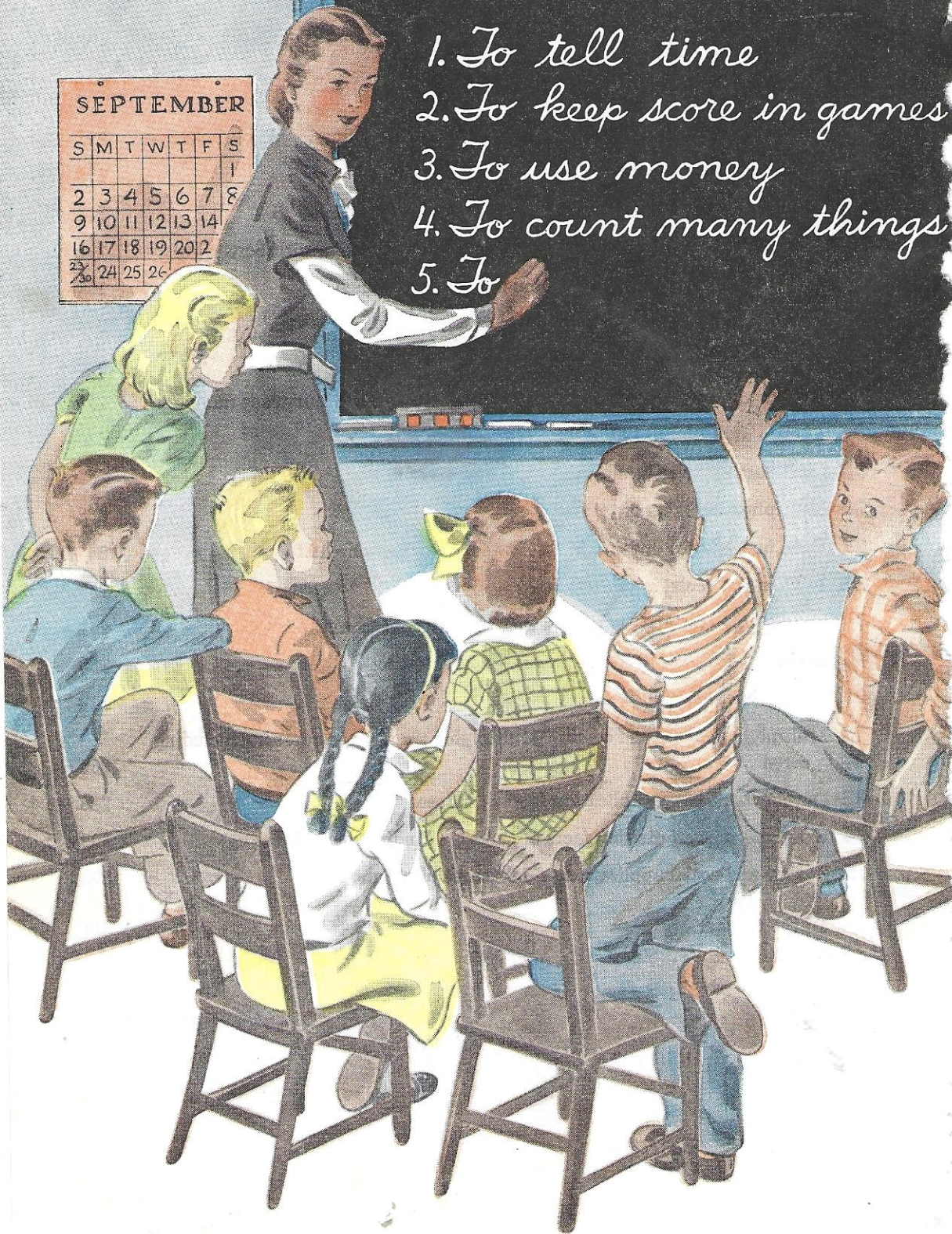
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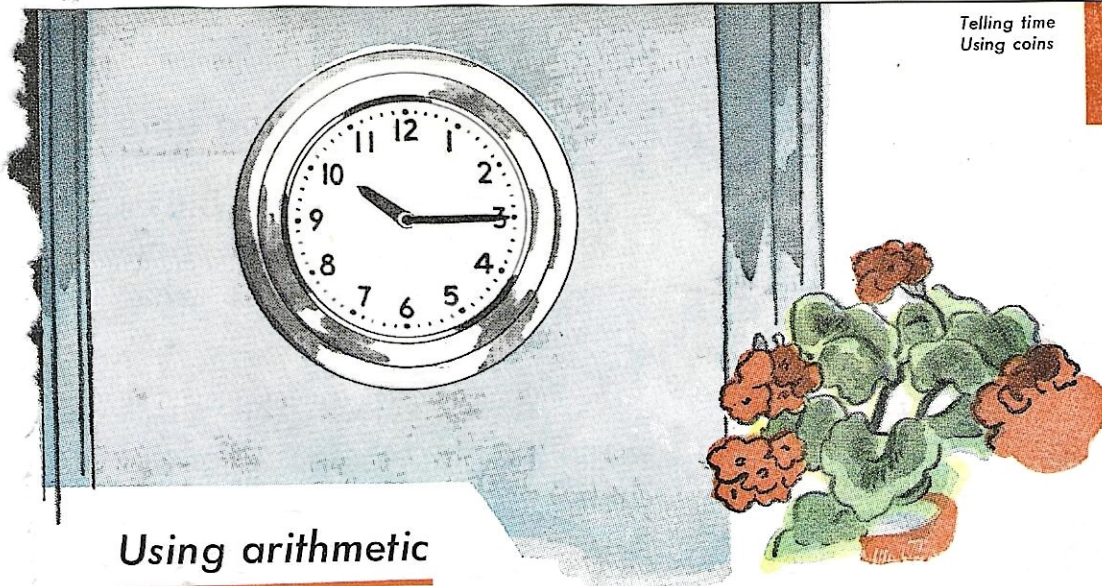
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How We Use Arithmetic

- 1. To tell time*
- 2. To keep score in games*
- 3. To use money*
- 4. To count many things*
- 5. To*

SEPTEMBER						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	
16	17	18	19	20	21	
23	24	25	26			





Using arithmetic

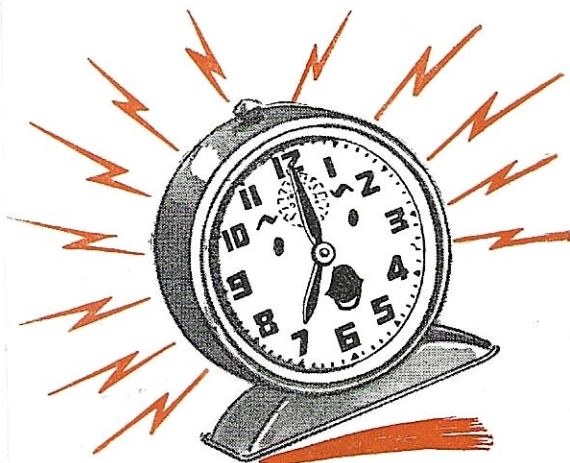
The children in Miss Bell's class have been talking about ways to use arithmetic. Look at the picture. Read what they have been saying.

The children told Miss Bell other ways they use arithmetic. They said they use it most often when they tell time and when they use money.

Tom said, "I think we can learn more about telling time and using money."

"That's a good idea, Tom," said Miss Bell. "We'll start our arithmetic by studying about clocks and coins."

1. Do you use arithmetic in the ways Miss Bell's class uses it?
2. In what other ways have you used arithmetic today?
3. Do you often need to tell time? Tell when.
4. What time is it by the clock in Miss Bell's room?
5. Do you often need to use coins? Tell when.
6. On pages 2 to 4 are some lessons on telling time and using money. Miss Bell's children can answer all the questions. Can you?



Telling time

1. Ding-a-ling goes Billy's alarm clock. At what time does Billy get up? At what time do you get up?

2. At 7 o'clock the short hand points to ?; the long hand points to ?.

3. What time does each of the clocks below say?

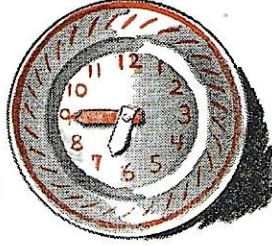
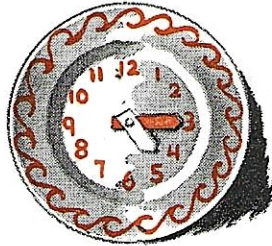
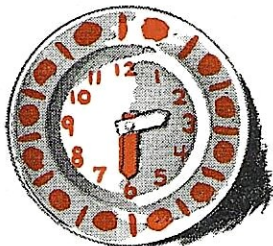
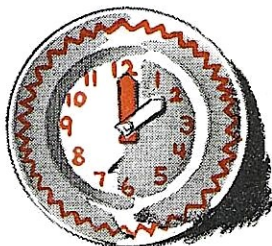


4. Which clock shows about what time Billy's school starts in the morning? about when Billy goes home to lunch? when his school closes in the afternoon? when he eats his supper?

5. To what number does the short hand point at 10 o'clock? 5 o'clock? 6 o'clock? 11 o'clock? 4 o'clock? 2 o'clock?

6. To what number does the long hand point at each hour in Example 5?

7. What time does each of these toy clocks say?



Ann said, "The long hand makes me think of a clown. At 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 o'clock he stands up straight.

"At half past any hour he stands on his head.

"At quarter of or quarter past any hour he lies down."

1. Look at the toy clocks at the bottom of page 2. Does Ann's rule for the long hand work?

2. Make a toy clock. Does Ann's rule work when it says:

● 1 o'clock, 2 o'clock, and so on up to 12 o'clock?

● Half past 1, half past 2, and so on up to half past 12?

● 15 minutes past 1, 15 minutes past 2, and so on up to 15 minutes past 12? (Another way of saying "15 minutes past 12" is "quarter past 12.")

● 15 minutes of 1, 15 minutes of 2, and so on up to 15 minutes of 12? ("15 minutes of 12" is the same as "quarter of 12.")

3. Show how the clock looks and tell the time every 5 minutes from 10 o'clock until 11 o'clock.

4. At 8 o'clock the long hand points to ?. What time will it be the next time the long hand points to 12?

5. How long does it take the long hand to go from 12 around to 12?

6. Use the alarm clock on page 2 to prove that there are 60 minutes in an hour. Count the minute marks by 5's.

7. From 7 o'clock until 8 o'clock is how many minutes?

8. Tell things you might do at 8 A.M.; at 7 P.M.



12 o'clock in the daytime is *noon*.

6 A.M. is 6 o'clock in the *morning*.

6 P.M. is 6 o'clock in the *evening*.

There are 60 minutes in an hour.

Coins you use

1. Tell some things you could buy if you had a cent; a nickel; a dime; a quarter.



CENT
1¢



NICKEL
5¢



DIME
10¢



QUARTER
25¢

2. A 5-cent piece is called a _____.
3. A 10-cent piece is called a _____.
4. A 25-cent piece is called a _____.
5. The sign ¢ means ____; 8¢ means _____ cents.

Tell the missing numbers. Be sure to make fair trades.

6. John traded a nickel for _____ cents.
7. He traded a dime for _____ cents.
8. He traded a dime for _____ nickels.
9. He traded a quarter for _____ cents.
10. He traded a quarter for _____ nickels.
11. He traded a quarter for 2 dimes and _____ cents.
12. Can you tell 6 other ways to change a quarter?
13. Read these prices: 8¢, 3¢, 10¢, 15¢, 20¢, 25¢.
14. What coins could you give to pay for a 23-cent toy?
a 17-cent ball? a 6-cent candy bar? a 25-cent ticket?
15. Mary has two dimes and a nickel. Does she have enough money to buy a ball that costs a quarter?

Discoveries about numbers to 10

1. Tom had 6 pebbles. He used them to discover everything he could about the number 6. Look at his paper. What discoveries did he make?

Tom Barton	
● ● ● ● ● ●	● ● ● ● ● ●
5 and 1 are 6	4 and 2 are 6
1 and 5 are 6	2 and 4 are 6
1 from 6 is 5	2 from 6 is 4
5 from 6 is 1	4 from 6 is 2
● ● ● ● ● ●	● ● ● ● ● ●
3 and 3 are 6	3 twos are 6
3 from 6 is 3	
2 threes are 6	

2. Use 8 pebbles to discover what you can about the number 8. Write down what you discover. Draw dot pictures of your discoveries.

3. In the same way make all the discoveries you can about the number 7; the number 9; the number 10.

4. 6 and 1 are as many as 5 and ? .

5. 4 and 4 are as many as 5 and ? .

6. Tell all the pairs of numbers that make:

5 6 7 8 9 10

Discoveries about numbers to 10

Learning about 2

1. ● ●

Learning about 3

2. ● ● ●

Learning about 4

3. ● ● ● ●



Miss Bell showed the boys and girls the chart on page 7. She said, "Little children say this chart tells number stories.

"Older children, like you, say it shows *number facts*.

"What number facts does Row 1 show?"

Ben said, "Row 1 shows that *1 and 1 are 2.*"

Then he walked up to the chart and covered 1 of the dots to show that

1 from 2 is 1.

1. Look at the chart on page 7. Use Row 2 to show these facts:

2 and 1 are 3

2 from 3 is 1

1 and 2 are 3

1 from 3 is 2

2. What 4 facts can you learn from Row 3?

3. What 2 facts can you learn from Row 4?

4. What facts can you learn from each of the other rows?

5. Tell how you might need to use the facts in each row. For example, Row 1 answers either of these questions:

● Dick had 1 cent. He found another cent. How many cents did he have then?

● Molly has 2 apples. If she eats 1 apple, how many apples will she have left?

Number Chart

Learning about 2

1. ● ●

Learning about 7

11. ● ● ● ● ● ● ●

12. ● ● ● ● ● ● ●

13. ● ● ● ● ● ● ●

Learning about 3

2. ● ● ●

Learning about 8

14. ● ● ● ● ● ● ● ●

15. ● ● ● ● ● ● ● ●

16. ● ● ● ● ● ● ● ●

17. ● ● ● ● ● ● ● ●

18. ● ● ● ● ● ● ● ●

Learning about 4

3. ● ● ● ● ●

4. ● ● ● ● ●

Learning about 9

19. ● ● ● ● ● ● ● ● ●

20. ● ● ● ● ● ● ● ● ●

21. ● ● ● ● ● ● ● ● ●

22. ● ● ● ● ● ● ● ● ●

23. ● ● ● ● ● ● ● ● ●

Learning about 5

5. ● ● ● ● ● ●

6. ● ● ● ● ● ●

Learning about 10

24. ● ● ● ● ● ● ● ● ● ●

25. ● ● ● ● ● ● ● ● ● ●

26. ● ● ● ● ● ● ● ● ● ●

27. ● ● ● ● ● ● ● ● ● ●

28. ● ● ● ● ● ● ● ● ● ●

29. ● ● ● ● ● ● ● ● ● ●

Learning about 6

7. ● ● ● ● ● ● ●

8. ● ● ● ● ● ● ●

9. ● ● ● ● ● ● ●

10. ● ● ● ● ● ● ●

Learning arithmetic facts

► Facts that coins teach you

Coins help you learn arithmetic. Picture 1 teaches that:

5 and 1 are 6

1 from 6 is 5

1 and 5 are 6

5 from 6 is 1

Tell four facts you can learn from Picture 2; Picture 3; Picture 4.



Tell two things you can learn from each of these pictures:



7. Do Pictures 5 and 6 teach that 2 fives are 10?

8. Tell how you might use the arithmetic you learn from each picture on this page. For example, Picture 1 helps to answer these questions:

- Bob had 1¢. He found a nickel. Then he had ? cents.
- Tom had 6¢. He lost a nickel. Then he had ? cent.
- Mary had 5 paper dolls. She made 1 more. Then she had ? paper dolls.
- Joe had 6 toy planes. He broke 1. Then he had ?.

► Facts that counting teaches you

1. Counting by 1's to 10 teaches you that 1 and 1 are 2; 2 and 1 are 3; 3 and 1 are 4. Name 6 other facts that counting to 10 teaches you.
2. Count backward from 10. That teaches that 1 from 10 is 9; 1 from 9 is 8; 1 from 8 is 7. Name 6 other facts that counting backward teaches you.
3. Counting by 2's to 10 teaches you what facts?
4. Counting by 3's to 9 teaches what facts?
5. What facts do you learn by counting backward by 2's from 10? by 3's from 9?

► Facts that doubles teach you

1 and 1 are 2 3 and 3 are 6 4 and 4 are 8
2 and 2 are 4 5 and 5 are 10

1. If you know that 3 and 3 are 6, then you know that 3 and 4 are ? ; that 3 and 2 are ? .
2. What facts can you learn from 2 and 2 are 4? from 4 and 4 are 8? from 5 and 5 are 10?

► Facts that number families teach you

1. Why are these four facts called a Number Family?

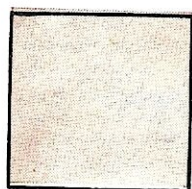
3 and 4 are 7 3 from 7 is 4
4 and 3 are 7 4 from 7 is 3

Name the 3 other members in the family of each fact below:

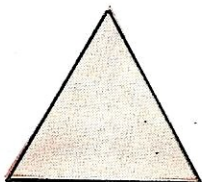
2. 4 and 5 are 9 3 from 8 is 5 2 from 9 is 7
3. 2 and 5 are 7 9 and 1 are 10 2 from 5 is 3
4. 4 from 10 is 6 3 and 6 are 9 3 from 10 is 7

Shapes have names

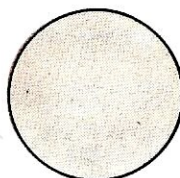
1. Bob is studying about Indians. He learned that the Indians used the shapes below in their writing. Read the names of these shapes. How many of these shapes can you see in your classroom?



SQUARE



TRIANGLE



CIRCLE



RECTANGLE

2. Bob made a drum from a round oatmeal box. He used Indian writing to decorate his drum. Below is some of the writing he used.

Can you find any squares in the Indian writing? any triangles? any circles? any rectangles?



Journey



Swamps



Time - night, day



Morning
(Sunrise)



Good luck

3. You will soon start an Arithmetic Folder. You will want to write figures well in your folder. Look carefully at the figures below. Then practice writing them until you make them look right.

1 2 3 4 5 6 7 8 9 10

Halves — fourths — thirds

▶ Jane cut a candy bar into 2 pieces the same size. She gave one piece to Mary and kept one piece. Each girl has *one half* of the candy bar.

$\frac{1}{2}$ means one half.

In a whole candy bar there are ? halves.

▶ There are 4 equal pieces in a waffle. Mother, Father, Jane, and Joe each ate one part of the waffle. Each one ate *one fourth* of the waffle.

$\frac{1}{4}$ means one fourth.

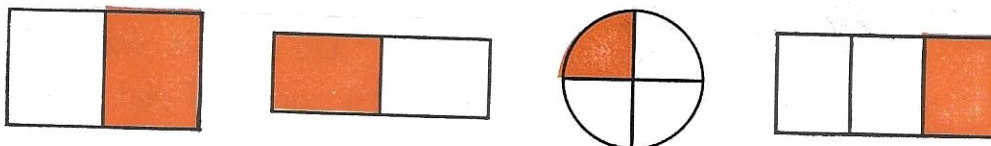
In a whole waffle there are ? fourths.

▶ Tom broke a candy stick into 3 pieces the same size. He gave one piece to Billy and one to Jim. He kept one piece. Each boy got *one third* of the candy stick.

$\frac{1}{3}$ means one third.

In a whole candy stick there are ? thirds.

1. Tell what part of each picture is red.



2. Which cup is $\frac{1}{2}$ full? $\frac{1}{4}$ full? $\frac{1}{3}$ full?



3. A whole equals ? halves; ? thirds; ? fourths.



Halves — thirds — fourths

The next page shows a paper in Molly's Arithmetic Folder. Study it. Make an Arithmetic Folder to keep your best work in this year.

Make a page now for your folder, showing halves, thirds, and fourths. Exs. 1 to 4 will help you.

1. Draw and cut out a circle. A paper milk-bottle top makes a good pattern. Fold the circle into 2 equal parts. Write one half in figures on each half. Paste the circle on the page for your folder.

2. Make a square for your folder. What will you use for a pattern? Fold the square into 3 equal parts. Write one third in figures on each third of the square.

3. Make a rectangle for your folder. Fold the rectangle into 2 equal parts. Fold it again to make 4 equal parts. Write one fourth in figures on each fourth of the rectangle.

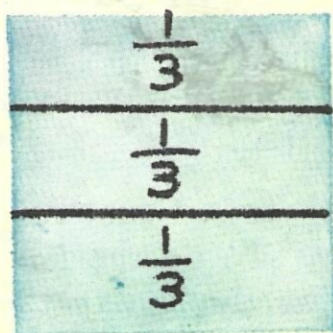
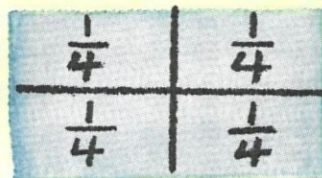
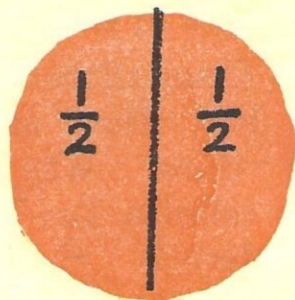
Which is larger, $\frac{1}{2}$ of the rectangle or $\frac{1}{4}$ of it? Does 1 half of the rectangle equal 2 fourths of it?



4. Would you like to cut out a red paper heart for your folder? Do it this way:

- Fold a piece of red paper into halves.
- Draw a half heart against the fold in the paper, as Nancy has done in the picture.
- Fold the paper and cut along the line you drew.

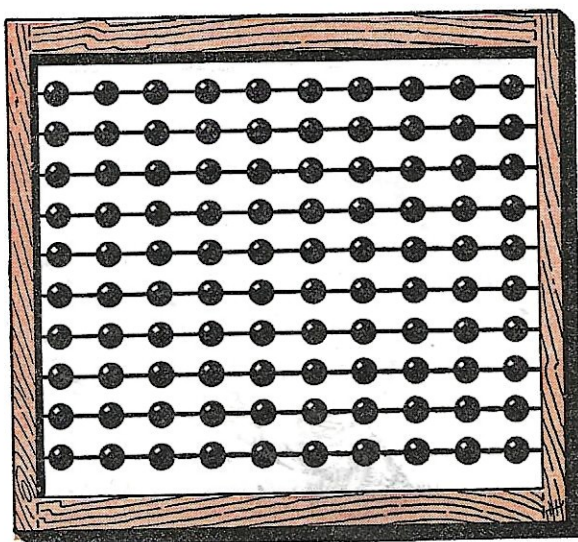
Molly Turner



This cookie is divided into halves 

This cookie is divided into fourths 

This is a cake. It is cut into 2 pieces. The 2 pieces are not the same size, so the cake is not cut in half.



Ten-Tens Counter

1. How many beads are there in each row?

2. Count all the beads by 10's. How many are there? Why is this called a Ten-Tens Counter?

3. How many beads are there in 2 rows? in 3 rows? in 4 rows?

4. How many are 2 tens? 3 tens? 4 tens?

On the next page is another Ten-Tens Counter. It is partly covered by a piece of paper. To do the following examples, you will need a paper exactly like that piece. Your teacher will tell you how to make it.

5. Look at the counter on page 15. You can see 10 beads and 3 more. That is ? beads. Take the piece of paper you cut out. Place it on the bead counter on this page so that you can see 10 beads and 3 more.

6. Show 10 beads and 1 more. How many beads is that?

7. Show 10 beads and 2 more. How many beads is that?

8. Show 10 beads and 5 more. How many beads is that?

Show on the bead counter:

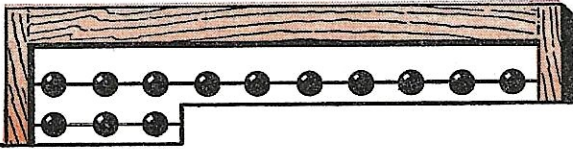
9. 10 and 6 are ?

10 and 8 are ?

10. 10 and 4 are ?

10 and 9 are ?

To the Teacher: See Note 1 on page 311.



*I use this piece of paper on
the Ten-Tens Counter.*

Mary Jane Miller

Show on the bead counter on page 14:

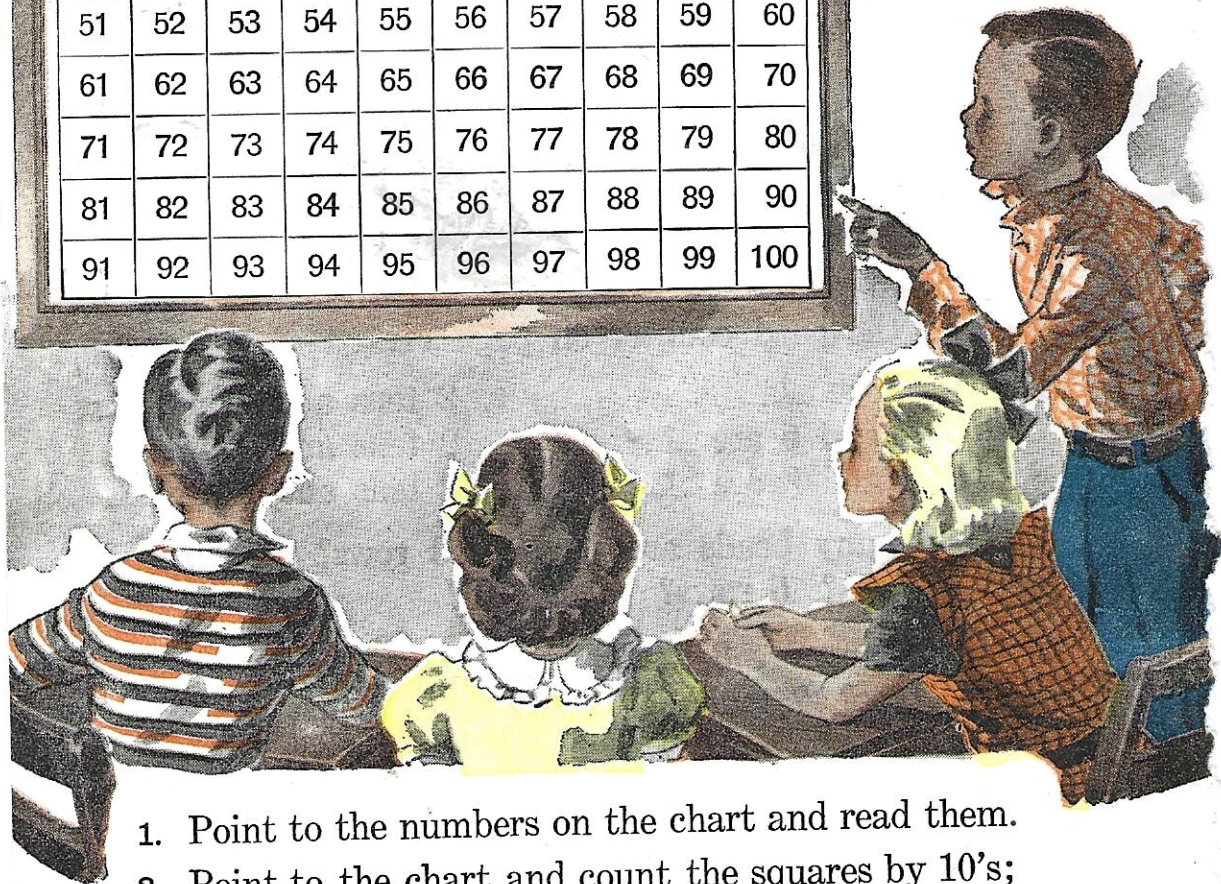
1. 2 tens are ?
2 tens and 5 are ?
2 tens and 2 are ?
2. 2 tens and 1 are ?
2 tens and 7 are ?
2 tens and 9 are ?
3. How many beads are there in 3 rows? in 4 rows?
6 rows? 8 rows? 5 rows? 9? 7? 10?
4. How many are 3 tens? 4 tens? 6 tens? 8 tens?
5 tens? 9 tens? 7 tens? 10 tens?

Show on the bead counter:

5. 3 tens and 5 are ?
3 tens and 7 are ?
6. 4 tens and 6 are ?
5 tens and 7 are ?
7. 6 tens and 6 are ?
7 tens and 5 are ?
8. 8 tens and 1 are ?
9 tens and 5 are ?
9. Which is more: 3 tens and 7, or 7 tens and 3?
10. Which is more: 8 tens and 4, or 4 tens and 8?

Ten-Tens
Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



1. Point to the numbers on the chart and read them.
2. Point to the chart and count the squares by 10's; by 5's; by 2's.
3. Read the number that tells how many squares there are in 1 row; 2 rows; 4; 3; 5; 8; 9; 6; 7; 10.
4. Read the number that means 2 tens; 4 tens; 3 tens; 5 tens; 8 tens; 9 tens; 6 tens; 7 tens; 10 tens.

On the chart find and read the number that means:

1. 10 and 4 20 and 3 30 and 6 40 and 2
2. 50 and 5 60 and 9 70 and 1 90 and 7
3. 1 ten and 6 5 tens and 6 3 tens and 2 4 tens and 7
4. 6 tens and 7 2 tens and 1 9 tens and 5 7 tens and 2
5. 37 means ? tens and ? 11 means ? ten and ?
6. 48 means ? tens and ? 54 means ? tens and ?
7. 65 means ? tens and ? 72 means ? tens and ?

8. What number comes just after 19? just after 29?
just after 39? 69? 89? 99? 49? 79? 59?

9. What number comes just before 20? just before 30?
just before 40? 50? 100? 60? 90? 80? 70?

10. Use a "quick trick" for finding these numbers on the
chart: 7 18 38 59 40 52 75 23 84 97

11. Beginning with 5, count by 10's to 95. Say: "5, 15,
25, . . ." Point to the chart as you count.

12. Beginning with 7, count by 10's to 97.

13. Beginning with 2, count by 10's to 92.

14. What number is 10 more than 6? 10 more than 26?
10 more than 35? 10 more than 54? 10 more than 78?

15. What number is 10 less than 16? 10 less than 47?
10 less than 53? 10 less than 77? 10 less than 98?

16. Which is larger, 64 or 46? 35 or 53? 27 or 72?
56 or 35? 52 or 28? 74 or 69? 28 or 82?

Prove your answers on the Ten-Tens Chart.

Dimes and cents — tens and ones

Dick asked, "Miss Bell, may I show the class an easy way to understand numbers larger than 10?"

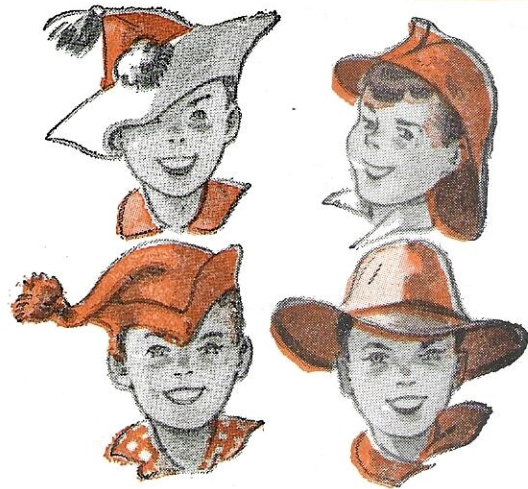
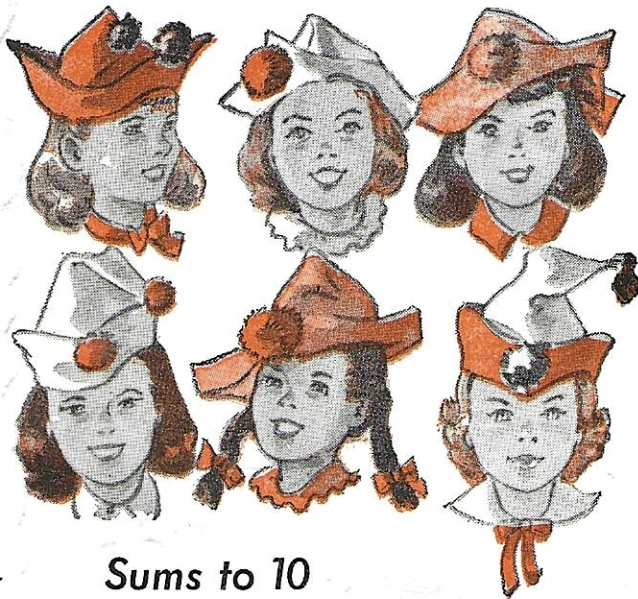
"Of course," said Miss Bell. "What is your way?"

"Well, I use dimes and pennies. A dime is worth 10 cents. I look at 2 dimes and 3 pennies, and count: '10 cents, 20 cents, and 3 more cents make 23 cents.' That helps me see that 2 tens and 3 are 23."



Then Dick gave the class these examples to do:

1. 4 dimes and 2 cents are ¢ 4 tens and 2 are
2. 1 dime and 5 cents are ¢ 1 ten and 5 are
3. 3 dimes and 6 cents are ¢ 3 tens and 6 are
4. 5 dimes and 7 cents are ¢ 5 tens and 7 are
5. 2 dimes and 4 cents are ¢ 2 tens and 4 are
6. 4 dimes and 4 cents are ¢ 4 tens and 4 are
7. 1 dime and 9 cents are ¢ 1 ten and 9 are
8. 6 dimes and 8 cents are ¢ 6 tens and 8 are
9. 8 dimes and 6 cents are ¢ 8 tens and 6 are
10. A quarter is worth dimes and cents.
11. Count to 100 by 10's. Write the numbers.
12. Write the numbers from 28 to 32; from 37 to 41.
13. Write the number that means 10 more than 14; 10 more than 37; 10 less than 50; 10 less than 62.
14. Ask your teacher to say numbers for you to write.



Sums to 10

The picture shows that Ann needed 6 paper hats for the girls and 4 for the boys at her party. 6 hats and 4 hats are 10 hats. 6 and 4 are 10.

► When you say “6 and 4 are 10,” you *add* 6 and 4. You are doing an *addition* example.

► An addition may be written like this: —————→

6
4
10

It is read “6 and 4 are 10.”

► Another way to write this addition is $6 + 4 = 10$.

The sign $+$ is a *plus sign*. The sign $=$ is an *equal sign*. $6 + 4 = 10$ is read “6 *plus* 4 *equals* 10.”

1. Read this picture-writing: •• and •••• are •••••
2. Here are 3 other ways to write the fact shown in Ex. 1. Read them. Which ways seem shortest and easiest?

2 and 3 are 5	$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$
$2 + 3 = 5$	

Write each fact in this picture-writing in 3 other ways.

3. ☆☆☆ and ☆☆☆☆ are ☆☆☆☆☆☆☆

4. ××××× and ××× are ××××××××

► In the addition example $3 + 6 = 9$, we say the *sum* is 9. “Sum” is the name of the answer to an addition example.

1

2

3

4

5

6

7

8

9

10

Read the additions below and tell the sums. Practice until you can tell every sum without the help of the circles.

$$\begin{array}{l} 1. \quad 6 + 3 = \underline{\quad ? \quad} \quad 5 + 4 = \underline{\quad ? \quad} \\ \quad \quad 3 + 6 = \underline{\quad ? \quad} \quad 4 + 5 = \underline{\quad ? \quad} \end{array}$$

$$\begin{array}{l} 2. \quad 3 + 4 = \underline{\quad ? \quad} \quad 2 + 5 = \underline{\quad ? \quad} \\ \quad \quad 4 + 3 = \underline{\quad ? \quad} \quad 5 + 2 = \underline{\quad ? \quad} \end{array}$$

$$\begin{array}{l} 3. \quad \begin{array}{cccccc} 7 & 3 & 6 & 5 & 2 & 7 \\ \hline 1 & 5 & 2 & 3 & 8 & 3 \end{array} \end{array}$$

$$\begin{array}{l} 4. \quad \begin{array}{cccccc} 4 & 2 & 1 & 2 & 8 & 3 \\ \hline 2 & 4 & 7 & 6 & 2 & 7 \end{array} \end{array}$$

$$\begin{array}{l} 5. \quad \begin{array}{cccccc} 3 & 7 & 6 & 1 & 2 & 4 \\ \hline 5 & 2 & 1 & 9 & 3 & 6 \end{array} \end{array}$$

$$\begin{array}{l} 6. \quad \begin{array}{cccccc} 5 & 2 & 1 & 9 & 2 & 6 \\ \hline 3 & 7 & 6 & 1 & 3 & 4 \end{array} \end{array}$$

$$\begin{array}{l} 7. \quad \begin{array}{l} 2 + 2 = \underline{\quad ? \quad} \quad 4 + 4 = \underline{\quad ? \quad} \\ 3 + 3 = \underline{\quad ? \quad} \quad 5 + 5 = \underline{\quad ? \quad} \end{array} \end{array}$$

8. Copy Exs. 3 to 7 and write the sums.

What addition fact do you use to find each missing number below? Write each fact in 2 ways.

9. John has 2 nickels; so he has ? ¢.
10. Tom had 4¢. He earned a nickel. He then had ? ¢.
11. Jack spent 3¢ and 7¢. In all he spent ? ¢.
12. Joan has 3 kittens and 2 rabbits. She has ? pets.
13. Ted has 4 marbles in 1 pocket. He has 3 marbles in another pocket. All together he has ? marbles.
14. Joe is in school 3 hours in the morning and 2 hours in the afternoon. He is in school ? hours each day.
15. Ann has a nickel. She says she needs 3¢ more to buy a ball. The ball costs ? ¢.

To the Teacher: See Note 2 on page 311.

Using addition to 10

1. Jane has 10 jacks. When she is "for 5's," she picks up 5 jacks. Then she picks up 5 more. Do her jacks show that $5 + 5 = 10$?

2. When Jane is "for 6's," she picks up 6 jacks and then 4 more. Draw jacks to show that $6 + 4 = 10$.

3. What additions do Jane's jacks show when she is "for 7's"? "for 8's"? "for 9's"?

What additions do you use to find the missing numbers in the problems below? Write each fact in 2 ways.

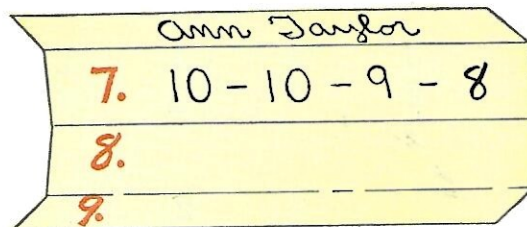
4. Jack has 2 pencils at school. He has 7 pencils at home. In all, he has ? pencils.

5. Peter has a nickel in one pocket. He has 4 cents in another pocket. In the two pockets he has ? cents.

6. Two pairs of mittens are ? mittens.

Practice until you can say all these sums. Then write the sums on folded paper without copying the examples. The picture shows you how to do it. Number each row and put a dash between answers. Do not write in your book.

7.	$\begin{array}{r} 4 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 3 \\ \hline \end{array}$
8.	$\begin{array}{r} 9 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 1 \\ \hline \end{array}$
9.	$\begin{array}{r} 5 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 3 \\ \hline \end{array}$



Learning to remember addition facts

1. Tell what each addition in Ex. 2 below could stand for. For example, $\begin{array}{r} 9 \\ +1 \\ \hline \end{array}$ could mean, "Tommy had 9 cents. He found another cent. Then he had ? cents."

2. Practice until you can say every sum. Then write the sums on folded paper.

$\begin{array}{r} 3 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +9 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ +1 \\ \hline \end{array}$
--	--	--	--	--	--	--	--	--

3. Did you make mistakes in writing any sums in Ex. 2? If so, you need practice in remembering those additions.

On the next page you will learn how to make and use Help-Yourself Cards for the facts you need to practice.

Study the cards. Then do Ex. 2 again. Keep studying the cards and doing Ex. 2 until you can write all the answers correctly.

Now do Exs. 4 to 7 in the same way.

4.

$\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ +1 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$
--	--	--	--	--	--	--	--	--

5.

$\begin{array}{r} 5 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ +1 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ +6 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +1 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +1 \\ \hline \end{array}$
--	--	--	--	--	--	--	--	--

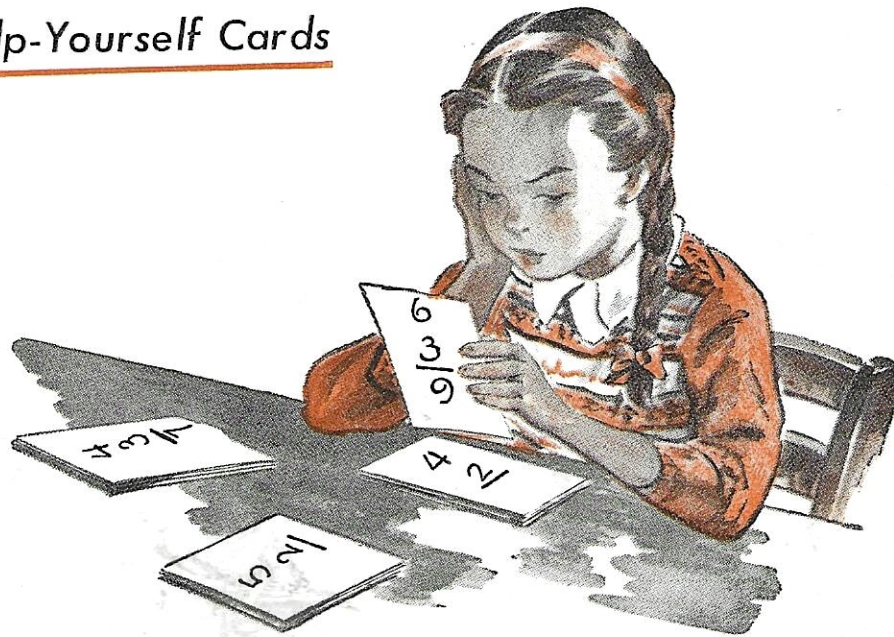
6.

$\begin{array}{r} 4 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +6 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ +8 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ +1 \\ \hline \end{array}$
--	--	--	--	--	--	--	--	--

7.

$\begin{array}{r} 3 \\ +1 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +8 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +1 \\ \hline \end{array}$
--	--	--	--	--	--	--	--	--

Help-Yourself Cards



Betsy has made herself a pack of Help-Yourself Cards for the facts she needs to practice. On the front of each card is an addition example. On the back of the card the example is written with the answer.

Betsy looks at the front of each card and says the answer as quickly as she can. Then she looks at the back of the card to see if she said it correctly. If she did, she puts it in her "Know" pile. If she didn't, she puts it in her "Don't Know" pile.

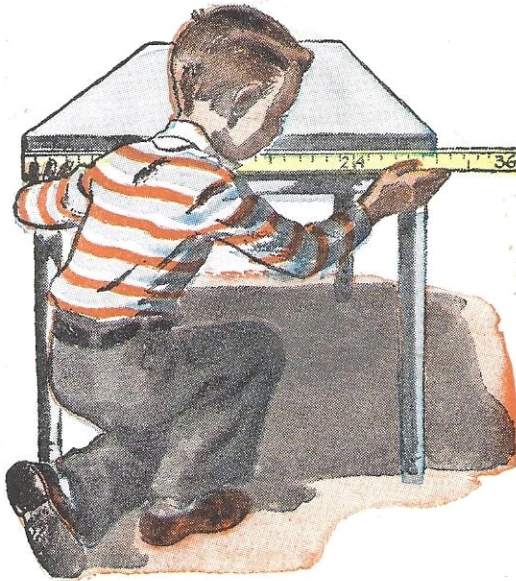
After Betsy has finished, she studies all the examples in her "Don't Know" pile very carefully. When she thinks she knows them, she mixes them with the cards in her "Know" pile. The next day she tests herself again to see if she can give every answer correctly.

When you make your cards, you can find the correct answers to write on the backs of them on page 309.

To the Teacher: See Note 3 on page 311.

How wide? How long? How deep?

Miss Bell's pupils want to bring a table from the library to their room. They are not sure it will go through their door.



► Tom said, "Let's bring the table to the door and see if the door is wide enough."

► Jim said, "I have a better idea. I'll cut off a piece of string to show how wide the table is. Then I'll carry only the string to see if the door is wide enough."

► John said, "We can use a foot ruler to find how wide the table and door are."

► Joe said, "Yes, we could use a foot ruler, but it will be easier if we use a yardstick to measure the door and table."

1. Will the boys' ideas help? Whose idea is best? Why?
2. Jane is going to buy a new pair of curtains for her room. Can she take the window to the store, so that she can buy curtains just long enough? What should she do?
3. If two things cannot be placed side by side, what is the best way to find which is wider, or longer, or taller, or deeper?
4. Hold your hands about an inch apart; a foot apart; a yard apart.
5. Which would you measure in inches? in feet? in yards?

pencil window blackboard ribbon rug

1. Have you ever needed to measure? Tell when.
2. On the blackboard draw a line you think is 1 foot long. Draw another 1 yard long. Check by measuring.
3. Ask your teacher to draw 12 lines on the board. First guess how long each line is. Then measure it.
4. Measure a yardstick with a foot ruler. How many feet are in a yard?
5. How many inches long is a foot ruler? a yardstick?

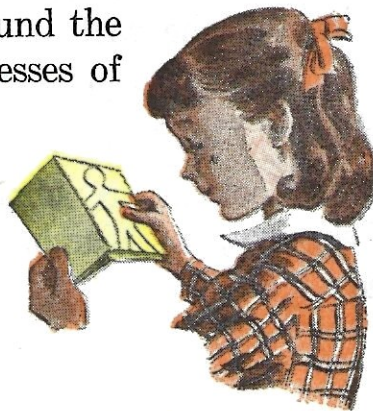
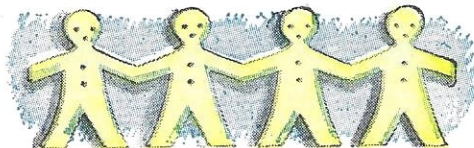


$12 \text{ inches (in.)} = 1 \text{ foot (ft.)}$
 $3 \text{ feet (ft.)} = 1 \text{ yard (yd.)}$
 $36 \text{ inches} = 1 \text{ yard}$

6. Notice that *in.* is a short way of writing *inch* or *inches*. What is a short way of writing *foot* or *feet*? a short way of writing *yard* or *yards*?

7. Make these holding-hands paper dolls to keep in your Arithmetic Folder.

- Cut a paper 5 inches wide and 16 inches long.
- Fold the paper into fourths *exactly* the way Martha is doing in the picture.
- Draw a picture of a doll on $\frac{1}{4}$ of the strip, as Martha did. Be sure the doll's arms reach from side to side of the paper.
- Fold the paper together. Cut around the pattern of the doll through 4 thicknesses of paper.



The calendar

"Today is my birthday," said Ann. "It is the tenth of September. I am eight years old."

The children sang "Happy Birthday" to Ann.

Then Miss Bell said, "Let's make a birthday chart. It will show when each one of you has a birthday. Maybe we can plan a surprise for each birthday."

"We must know the names of the months before we make our chart. You name the months. I will write them."

Read what Miss Bell wrote:

1. January	4. April	7. July	10. October
2. February	5. May	8. August	11. November
3. March	6. June	9. September	12. December

Miss Bell said, "January is the first month of the year. So the January birthdays go first on our chart. Raise your hand if your birthday comes in January."

Two children raised their hands.

Jean said, "My birthday comes on January 21."

Sally said, "My birthday comes on January 4."

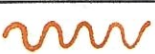
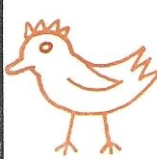
1. Look at the birthday chart on the next page. Why did Miss Bell write Sally's name before Jean's?

2. Miss Bell wrote January on the chart in a short way. How did she write it?

3. What month comes after January? How do you write February in a short way?

4. Look at the chart and tell whose birthday comes in February; in March.

5. Read the whole birthday chart.
6. Betsy and Jack are twins. How does the chart show that?
7. How many months (mo.) are there in a year (yr.)? Name them in order.
8. Write the names of the months the long way. Then write them the short way.
9. Do you know what month comes after December?
10. Find the date of your birthday on a calendar.
11. On what day of the week is your birthday this year?
12. Perhaps your class would like to make a birthday chart.
13. Make a small birthday chart for your Arithmetic Folder. Show on your chart the birthdays of the people you like best.

	Name	Birthday	Name	Birthday	
	Sally	Mo. Da. Jan. 4	Paul	Mo. Da. July 8	
	Jean	Jan. 21	Teddy	July 30	
	Eddy	Feb. 6	Janet	Aug. 5	
	Linda	Mar. 10	Ann	Sept. 10	
	Kitty	Mar. 28	Betsy	Sept. 12	
	Fred	Apr. 2	Jack	Sept. 12	
	Mona	Apr. 17	Kent	Oct. 14	
	Larry	Apr. 22	Cathy	Nov. 5	
	Marie	May 14	Tom	Nov. 18	
	Roger	June 1	Gerry	Dec. 29	



Measuring liquids

1. Rita wants to make pudding. The directions call for 2 cups of milk. Rita does not have a measuring cup. She has a pint bottle of milk. Has she enough milk?

2. To find out if Rita has enough milk, fill a pint bottle with water. Pour the water into drinking glasses. A measuring cup and a regular-size drinking glass hold the same amount. How many glasses can you fill?

LEARN
THIS

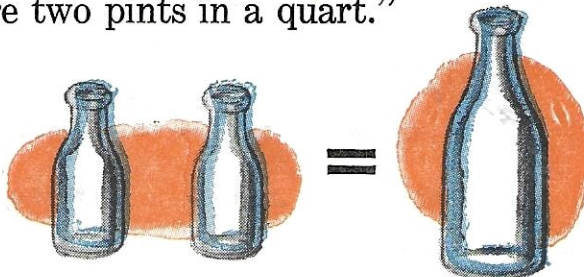


2 glasses = 1 pint

3. Tom carefully poured one pint of water into a quart bottle. Then he poured another pint of water into the quart bottle. The two pints just filled the quart bottle.

Tom said, "There are two pints in a quart."
Is he right?

LEARN
THIS



2 pints (pt.) = 1 quart (qt.)

4. Tony says he can fill 4 glasses with 1 quart of milk. Do you think he can? Prove it.

5. Edith mixed 1 pint of grape juice with 1 pint of water. How much liquid did she have? Did she have enough to give a glass to Ann, Jane, Jean, and herself?

6. Judy wants to fill 8 glasses with apple juice. How many glasses can she fill from 1 pint bottle? 2 pint bottles? 3? 4?

7. Jim's mother is canning plums. She asked Jim to go to the cellar for 4 quart jars. Jim can find only 3 quart jars, but there are some pint jars. What will Jim do?

8. Sally is serving ice cream to 6 girls. A pint serves 3 girls. Will a quart serve 6? Why?

9. Carl and Dick need a quart of paint for their hut. They have a pint. Dick says, "Buy another pint." Do you agree?

10. A quart bottle of lemon drink costs 18¢. A pint bottle costs 10¢. Bobby says, "It's cheaper to buy lemon drink in quart bottles." What does he mean?

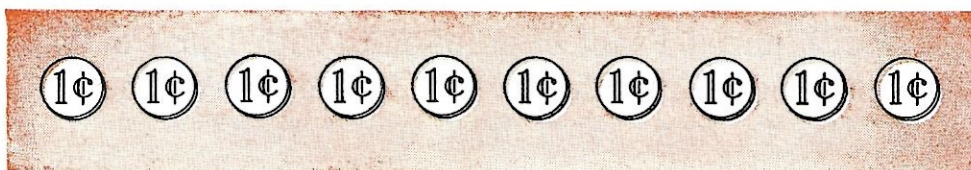
11. Lee had a quart carton of milk. She filled 2 glasses with milk. How much was left in the carton?

12. How many things can you name that are sold by the pint and by the quart?

13. How much does a quart of milk cost at your store? How much does a pint cost?

14. A committee may bring to class some bottles, jars, and cans. Try to guess how much water each will hold. How can you find out who made the best guesses?

Subtracting from 10



John has 10¢. He plans to spend 4¢ for a top. He wonders how many cents he will have left.

To find out, look at the 10 cents he has. Cover the 4¢ he will spend. Then you see that he will have 6¢ left. John said, "4 from 10 is 6."

▶ When John says "4 from 10 is 6," he is *subtracting* 4 from 10. He is doing a *subtraction* example. To *subtract* means to *take away* one number from another.

▶ A subtraction may be written this way: →

▶ Here are three ways to read it: →

4 from 10 is 6
10 take away 4 is 6
10 minus 4 is 6

$$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$$

▶ The sign $-$ is a *minus sign*. It tells you to subtract.

▶ Another way to write the subtraction is $10 - 4 = 6$.

1. Use the picture above to find these answers:

$\begin{array}{r} 10 \\ - 9 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ - 8 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ - 7 \\ \hline \end{array}$
$\begin{array}{r} 10 \\ - 2 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ - 6 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ - 5 \\ \hline \end{array}$

2. Read each subtraction in Ex. 1 in 3 ways.

3. Make up a problem for each example in Ex. 1.

4. Billy has 7¢. He is going to buy a 4-cent pencil. Here are 6 ways to show how much he will have left. Which way do you like best? least?



- 7
- $\begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$
- 7 *take away* 4 is 3
- 7 *minus* 4 is 3
- 4 *from* 7 is 3
- $7 - 4 = 3$

Practice until you can say every answer in Exs. 1 to 7 without the help of the dot pictures.

● ● ● ● ● ● ● ● ●

1.	$\begin{array}{r} 9 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ - 6 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ - 2 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ - 1 \\ \hline \end{array}$
2.	$\begin{array}{r} 9 \\ - 7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ - 5 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ - 8 \\ \hline \end{array}$

● ● ● ● ● ● ●

5.	$7 - 6 = \underline{\quad ? \quad}$	$7 - 1 = \underline{\quad ? \quad}$
6.	$7 - 4 = \underline{\quad ? \quad}$	$7 - 3 = \underline{\quad ? \quad}$
7.	$7 - 2 = \underline{\quad ? \quad}$	$7 - 5 = \underline{\quad ? \quad}$

Draw dot pictures if you need help on these subtractions:

● ● ● ● ● ● ●

3.	$\begin{array}{r} 8 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ - 7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ - 1 \\ \hline \end{array}$
4.	$\begin{array}{r} 8 \\ - 6 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ - 5 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ - 2 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ - 3 \\ \hline \end{array}$

8.	$6 - 4 = \underline{\quad ? \quad}$	$6 - 3 = \underline{\quad ? \quad}$
9.	$5 - 3 = \underline{\quad ? \quad}$	$4 - 3 = \underline{\quad ? \quad}$
10.	$3 - 2 = \underline{\quad ? \quad}$	$5 - 2 = \underline{\quad ? \quad}$
11.	$4 - 2 = \underline{\quad ? \quad}$	$3 - 1 = \underline{\quad ? \quad}$
12.	$6 - 5 = \underline{\quad ? \quad}$	$6 - 2 = \underline{\quad ? \quad}$

13. Tom had 5 pebbles. He put them down in a row like this: ● ● ● ● ● He says they show these 2 additions and 2 subtractions:

$$4 + 1 = 5 \quad 1 + 4 = 5 \quad 5 - 4 = 1 \quad 5 - 1 = 4$$

Tell 2 additions and 2 subtractions that Tom's 5 pebbles show when he puts them this way: ● ● ● ● ●

14. Write all the additions and subtractions you can learn from 6 pebbles; from 7; 8; 9; 10.

15. If $7 + 3 = 10$, then $10 - 3 = \underline{\quad ? \quad}$, and $10 - 7 = \underline{\quad ? \quad}$.

16. If $6 + 2 = 8$, then $8 - 6 = \underline{\quad ? \quad}$, and $8 - 2 = \underline{\quad ? \quad}$.

Tell 3 other members of the family of each fact below:

17. $6 + 3 = \underline{\quad ? \quad}$ $8 - 3 = \underline{\quad ? \quad}$ $9 - 5 = \underline{\quad ? \quad}$ $2 + 3 = \underline{\quad ? \quad}$

18. $4 + 6 = \underline{\quad ? \quad}$ $10 - 7 = \underline{\quad ? \quad}$ $6 + 2 = \underline{\quad ? \quad}$ $7 - 3 = \underline{\quad ? \quad}$

Number families

What is the missing number in each of these examples?

$$\begin{array}{ll} 1. \left\{ \begin{array}{l} 10 - 2 = ? \\ 10 - 8 = ? \\ 8 + 2 = ? \\ 2 + 8 = ? \end{array} \right. & 2. \left\{ \begin{array}{l} 10 - 6 = ? \\ 10 - 4 = ? \\ 6 + 4 = ? \\ 4 + 6 = ? \end{array} \right. & 3. \left\{ \begin{array}{l} 10 - 7 = ? \\ 10 - 3 = ? \\ 7 + 3 = ? \\ 3 + 7 = ? \end{array} \right. & 4. \left\{ \begin{array}{l} 9 - 5 = ? \\ 9 - 4 = ? \\ 5 + 4 = ? \\ 4 + 5 = ? \end{array} \right. \end{array}$$

$$\begin{array}{ll} 5. \left\{ \begin{array}{l} 9 - 6 = ? \\ 9 - 3 = ? \\ 6 + 3 = ? \\ 3 + 6 = ? \end{array} \right. & 6. \left\{ \begin{array}{l} 9 - 7 = ? \\ 9 - 2 = ? \\ 7 + 2 = ? \\ 2 + 7 = ? \end{array} \right. & 7. \left\{ \begin{array}{l} 8 - 5 = ? \\ 8 - 3 = ? \\ 5 + 3 = ? \\ 3 + 5 = ? \end{array} \right. & 8. \left\{ \begin{array}{l} 7 - 4 = ? \\ 7 - 3 = ? \\ 4 + 3 = ? \\ 3 + 4 = ? \end{array} \right. \end{array}$$

Find the answers to Exs. 9–13. What fact do you use to find each answer? Write each fact in 2 ways. Make drawings to prove your answers are right.

9. Ken found 8 walnuts. He ate 5. How many did he have left?

10. Dan made 9 paper airplanes. He threw away 3 that wouldn't fly. How many did he have then?

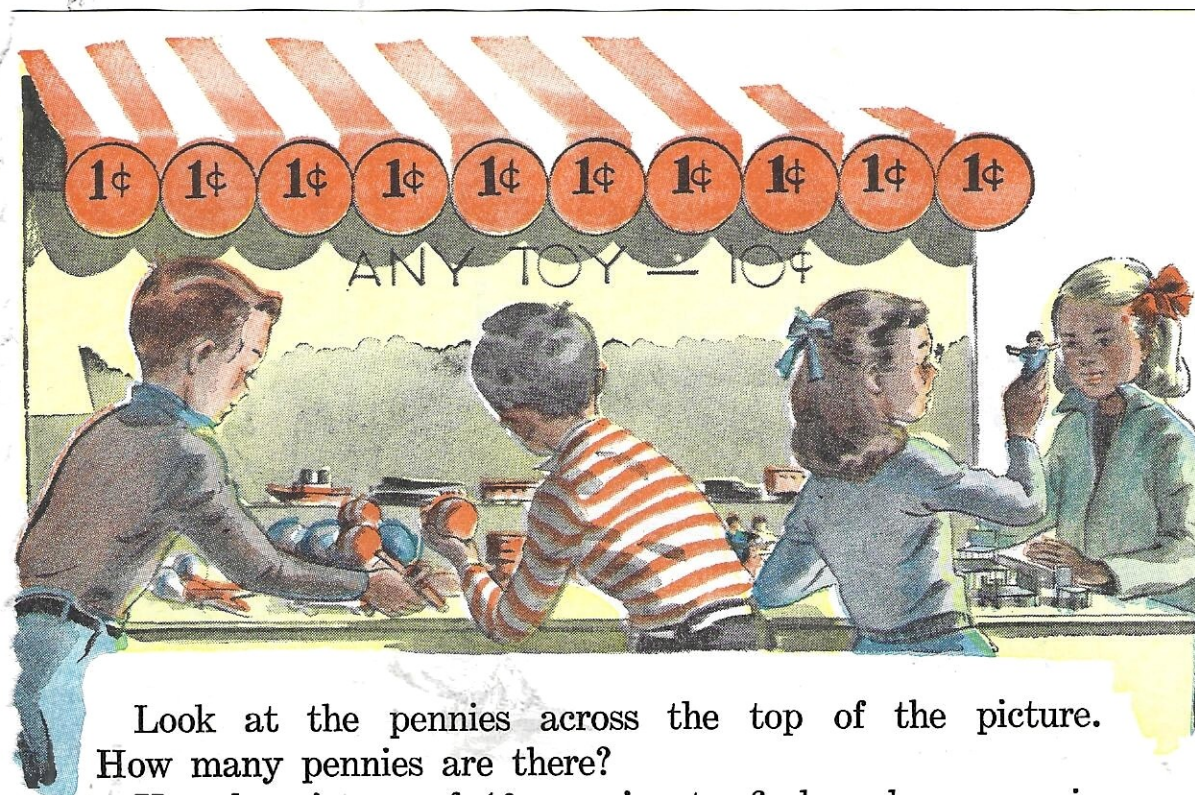
11. Ann had a dime. She spent 6¢. How much did she have left?

12. Roy had 9 toy trucks. He broke 2 trucks. How many did he have then?

13. Peter had 7 cookies. He gave Bill 3 cookies. How many did he have left?

■ To find the number left, you subtract.

14. Example 13 uses one of the facts in Ex. 8. Which one? Make up problems to show how you might need to use the other facts in Ex. 8.



Look at the pennies across the top of the picture. How many pennies are there?

Use the picture of 10 pennies to find each answer in Ex. 1. Cover the number of pennies you have. Then look to see how many more cents you need.

1. How many more pennies will you need to buy a 10-cent toy if you have 8¢? a nickel? 3¢? 9¢? 6¢? 7¢? 4¢? 2¢? 5¢? 1¢?

■ To find how many more you need, you subtract.

Use the picture of 10 pennies to do Exs. 2 to 6 if you need to.

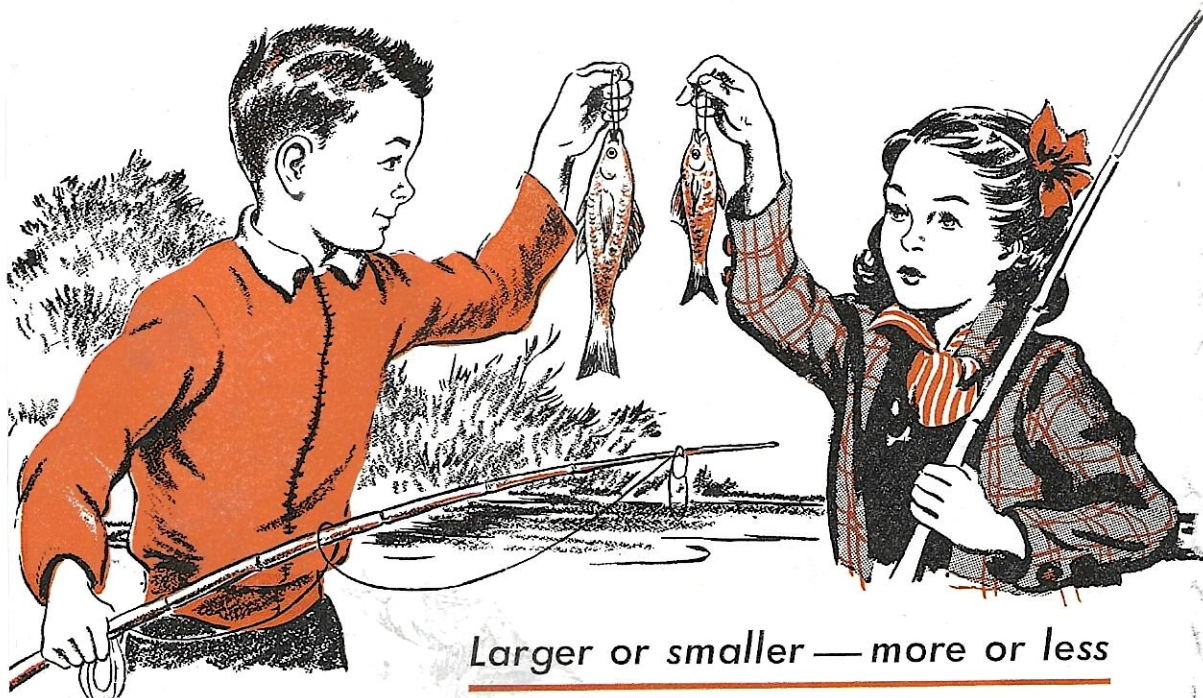
2. 5 and ? are 10 5 from 10 = ? $10 - 5 = \underline{\quad ? \quad}$

3. 7 and ? are 10 7 from 10 = ? $10 - 7 = \underline{\quad ? \quad}$

4. 4 and ? are 10 4 from 10 = ? $10 - 4 = \underline{\quad ? \quad}$

5. 2 and ? are 10 2 from 10 = ? $10 - 2 = \underline{\quad ? \quad}$

6. 3 and ? are 10 3 from 10 = ? $10 - 3 = \underline{\quad ? \quad}$



Larger or smaller — more or less

1. Whose fish is longer, Sue's or John's? Can you tell from the picture exactly how many inches longer John's fish is than Sue's?

2. To find out how many inches longer John's fish is than Sue's, what would you need to know about John's fish? about Sue's fish?

3. John's fish is 10 inches long. Sue's is 7 inches long. Do you add or subtract to find how many inches longer John's fish is than Sue's?

4. Is the missing number the same in each of these?
John's fish is ? inches longer than Sue's.
Sue's fish is ? inches shorter than John's.

5. What do you need *to know* and *to do*:

- to find how many more cents John has than Sue?
- to find how many years younger Sue is than John?
- to find how many inches shorter Sue is than John?
- to find how many pounds heavier John is than Sue?

● ● ● ● ● ● ●
 1. If you cover 3 of these 7 dots, you can see that 7 is ? more than 3. $7 - 3 = \underline{\quad ? \quad}$

2. If you cover 5 dots, you can see that 7 is ? more than 5. $7 - 5 = \underline{\quad ? \quad}$

3. Use the dots to find how much larger 7 is than 1; than 2; than 4; than 6.

4. Cover 3 dots to find how much less 3 is than 7.
 $7 - 3 = \underline{\quad ? \quad}$

5. Cover 5 dots to find how much less 5 is than 7.
 $7 - 5 = \underline{\quad ? \quad}$

6. John has 7¢. Sue has 4¢. John has ? ¢ more than Sue. Sue has ? ¢ less than John. $7 - 4 = \underline{\quad ? \quad}$

7. 7 is ? larger than 5.
 $7 - 5 = \underline{\quad ? \quad}$

8. 7 is ? more than 1.
 $7 - 1 = \underline{\quad ? \quad}$

9. 4 is ? smaller than 7.
 $7 - 4 = \underline{\quad ? \quad}$

To find how much larger or smaller one number is than another, you subtract.

10. To find how much more 9 is than 6, Tom wrote this subtraction. What is wrong? Tell a rule to keep Tom from making that mistake again.

6	<i>wrong</i>
$\begin{array}{r} 6 \\ - 9 \end{array}$	

11. Polly says she can find the answer to each of the problems below by covering 5 of these 8 circles. Is Polly right?



● Peter had 8¢. He spent a nickel. He had ? ¢ left.

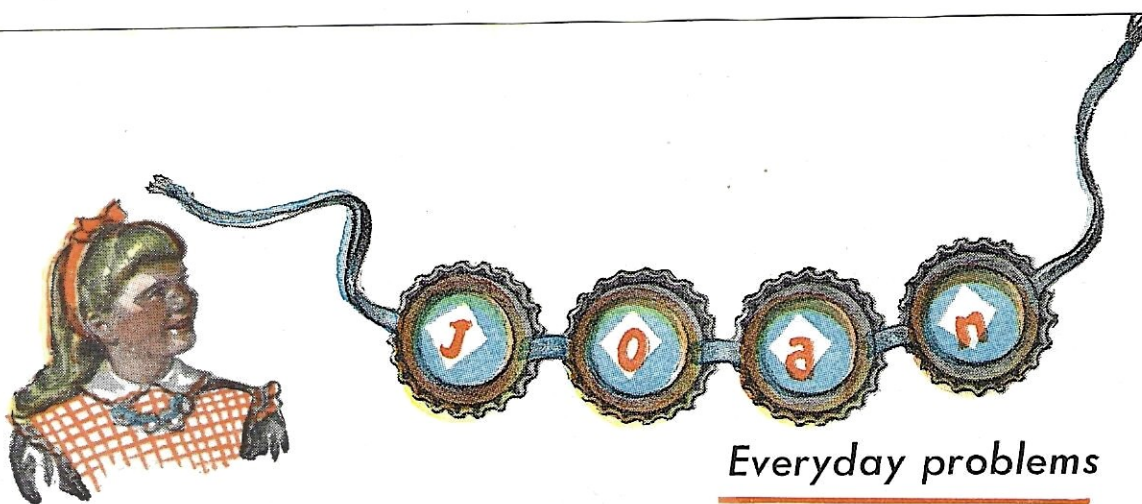
● Sue has a nickel. She wants to buy an 8-cent ball. She needs ? ¢ more.

● Ann has 8¢. Joe has 5¢. Ann has ? ¢ more than Joe.

12. Write the subtraction fact you used in Ex. 11.

13. Make up a problem for each of these subtractions:

$\begin{array}{r} 10 \\ - 5 \end{array}$	$\begin{array}{r} 9 \\ - 6 \end{array}$	$\begin{array}{r} 8 \\ - 4 \end{array}$	$\begin{array}{r} 7 \\ - 5 \end{array}$
--	---	---	---



Everyday problems

What number fact do you use to find each answer? Write each fact in 2 ways.

1. Joan wants to make a bottle-top necklace like this for herself and one for Sue. How many bottle tops will she need for her necklace? for Sue's? for both necklaces?
2. Dick sold 10 tickets for the class show. Jerry sold 7. How many more did Dick sell than Jerry?
3. There are 5 girls and 5 boys on Alice's team. How many children are on her team?
4. Don had 3 pencils. His grandfather gave him 2 more. How many pencils had he then?
5. Jack had 8¢ in his bank. He shook out a nickel for Sunday school. How many pennies were left in his bank?
6. Billy needs 9 wickets for a game of croquet. He can find only 7. He must hunt for the other ? wickets.
7. George is 9 years old. Tom is 6. George is how many years older than Tom?
8. Dick had 4¢. Then he found 6¢. He said, "I'll trade all my money for a dime." Would that be a fair trade?
9. There were 6 children playing in the yard. One had to go home. How many were left playing in the yard?

Learning to remember subtraction facts

► Tell what each subtraction fact in Ex. 1 could stand for. For example, $\overset{6}{-4}$ could mean: "Molly has 6¢. If she spends 4¢, how much will she have left?"

1. $\begin{array}{r} 6 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -2 \\ \hline \end{array}$

► Now subtract. Practice until you can say every answer in Ex. 1. Then write the answers on folded paper.

► Did you make any mistakes in writing the answers in Ex. 1? If so, make Help-Yourself Cards for any facts you do not know. Study the cards. Then do Ex. 1 again.

► Now do Exs. 2 to 5 in the same way.

2. $\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 2 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -4 \\ \hline \end{array}$

3. $\begin{array}{r} 8 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ -2 \\ \hline \end{array}$

4. $\begin{array}{r} 7 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$

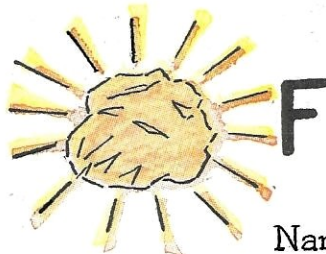
5. $\begin{array}{r} 10 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -6 \\ \hline \end{array}$

► Do the additions on page 22 again today.

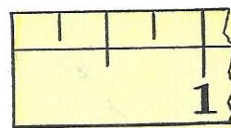
Just for fun

POS $\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$

Name this animal.



F



Name this bird.

Problem Test 1

1. To pay for a 17-cent loaf of bread, you could give a dime, a nickel, and ? pennies.
2. Molly has a nickel and 4 pennies. Has she enough to buy a 10-cent bag of popcorn?
3. If 4 boys share a watermelon equally, what part of the melon will each get? Write your answer in figures.
4. At half past 3 Billy's mother said, "You may play outdoors for 2 hours." Billy may play until half past ?.
5. Rob has 3 dimes and 4 pennies. In all, he has ?¢.
6. Sally has 5 rows of 10 stamps and 8 more stamps. In all, she has ? stamps.
7. Ted has 8 gumdrops. He wants to share them with Ann. If he keeps 5, Ann will get ?.
8. Bob had a quarter changed into ? nickels.
9. Sue has 10¢. Jo has 6¢. Sue has ?¢ more than Jo.

10. Joe Brown is keeping a record of his marks on Problem Tests. Joe had 9 problems right on the first test. He got 10 points for each problem. His mark was 9 tens, or ?.

How many problems did you have right on Problem Test 1? Give yourself 10 points for each right answer. What is your mark? Start a record, like Joe's, of your marks on the 8 Problem Tests in this book. Keep it in your folder.

Joe's Problem Test Record	
Test	Marks
1	90
2	
3	
4	
5	
6	
7	
8	

To the Teacher: See Note 5, page 311.

Now is the time to test yourself

Work carefully. Check your answers.

1. How many months are there in a year?

2. What number means 7 tens and 5 ones?

3. What part of this square is each triangle?

Write your answer in figures.

4. 1 foot = inches.

5. How many pints are there in a quart?

6. What time is it by this clock? $\longrightarrow$

7. Jane had 3¢. She earned a nickel. How much had she then?

8. Which one of these is an addition example? Copy it.

● 4 from 9 is 5

● 9 take away 4 is 5

● 9

● $9 - 4 = 5$

● 9 minus 4 is 5

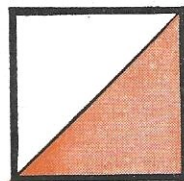
$$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$$

● 4 and 5 are 9

9. Write in figures what this picture shows:

☆☆☆ and ☆☆☆☆ are ☆☆☆☆☆☆☆

10. Jane has 4¢. She wants to buy an 8-cent pencil. She needs ¢ more.

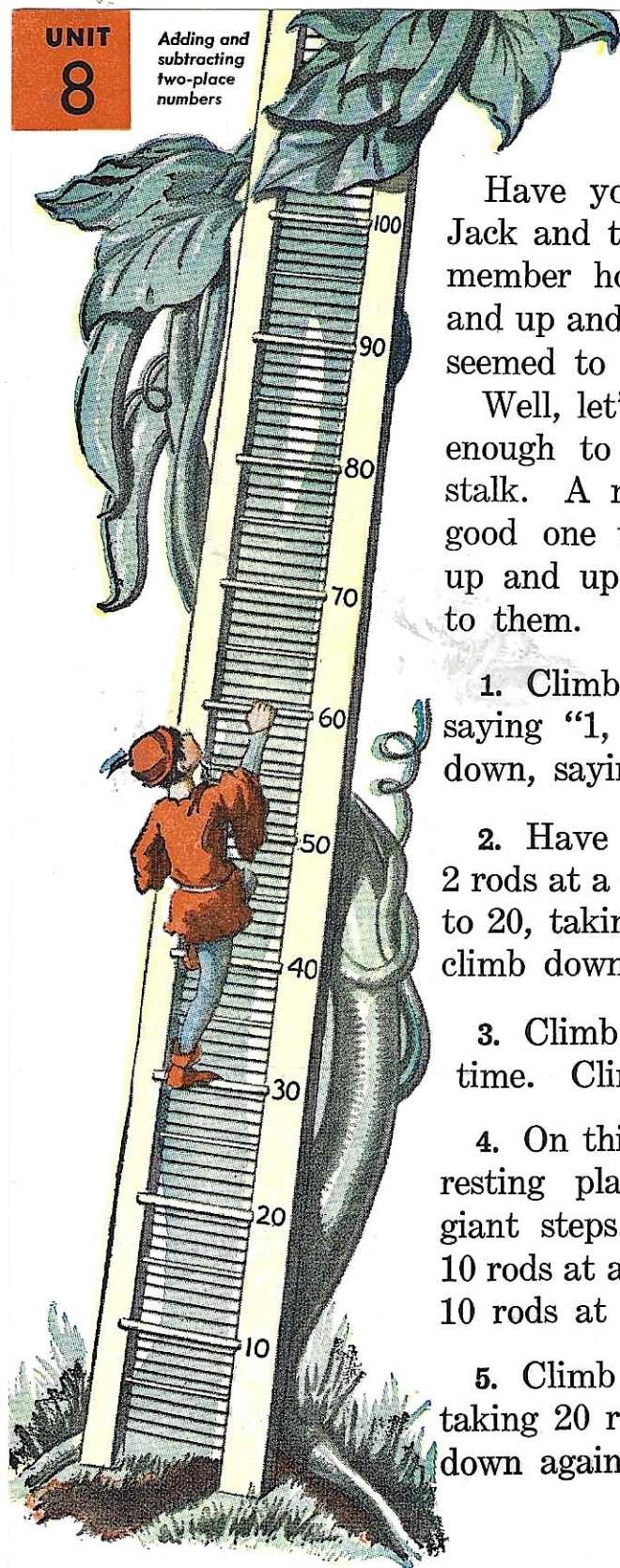


Just for fun

● I'm thinking of a number. If you put 3 with it, you will have 7. What is the number?

● I'm thinking of a number. If you divide it into 2 equal parts, you will have 4 in each part. What is the number?

● I'm thinking of a number. If you take away 5, you will have only 4. What is the number?



Up and down by tens

Have you ever read the story of Jack and the Beanstalk? Do you remember how the beanstalk grew up and up and up toward the sky? There seemed to be no end to its growing.

Well, let's think about a ladder tall enough to put against Jack's beanstalk. A number ladder would be a good one to use. Numbers, too, go up and up and up. There is no end to them.

1. Climb to 10, one rod at a time, saying "1, 2, 3," and so on. Climb down, saying "10, 9, 8," and so on.

2. Have you ever gone up a ladder 2 rods at a time? Climb up the ladder to 20, taking 2 rods at a time. Now climb down again, 2 rods at a time.

3. Climb to 30, taking 5 rods at a time. Climb down, 5 rods at a time.

4. On this number ladder there is a resting place every 10 rods. Take giant steps. Climb up to 100, going 10 rods at a time. Climb down again, 10 rods at a time.

5. Climb up the ladder to 100, taking 20 rods at a time. Now climb down again, 20 rods at a time.

Now you are ready to do some harder climbing.

1. Take 2 giant steps up the ladder, 10 rods at a time. That brings you to ? . Now take 3 more giant steps, 10 rods at a time. That brings you to ? .

2 tens and 3 tens are 5 tens.

$$\begin{array}{r} 2 \text{ tens} \\ 20 \end{array}$$

20 and 30 are 50.

$$\begin{array}{r} + 3 \text{ tens} \\ \hline 5 \text{ tens} \end{array} \quad \begin{array}{r} + 30 \\ \hline 50 \end{array}$$

Go up the ladder to find:

2. 2 tens and 4 tens are ? tens.

$$\begin{array}{r} 2 \text{ tens} \\ 20 \end{array}$$

20 and 40 are ? .

$$\begin{array}{r} + 4 \text{ tens} \\ \hline \end{array} \quad \begin{array}{r} + 40 \\ \hline \end{array}$$

3. 3 tens and 4 tens are ? tens.

$$\begin{array}{r} 3 \text{ tens} \\ 30 \end{array}$$

30 and 40 are ? .

$$\begin{array}{r} + 4 \text{ tens} \\ \hline \end{array} \quad \begin{array}{r} + 40 \\ \hline \end{array}$$

4. 5 tens and 2 tens are ? tens.

$$\begin{array}{r} 5 \text{ tens} \\ 50 \end{array}$$

50 and 20 are ? .

$$\begin{array}{r} + 2 \text{ tens} \\ \hline \end{array} \quad \begin{array}{r} + 20 \\ \hline \end{array}$$

5. Starting at 50, climb down the ladder. Take 3 giant steps, 10 rods at a time. That brings you to ? . How many more giant steps of 10 rods each do you have to take to get to the bottom?

Now go down the ladder to find:

6. 3 tens from 5 tens is ? tens.

$$\begin{array}{r} 5 \text{ tens} \\ 50 \end{array}$$

30 from 50 is ? .

$$\begin{array}{r} - 3 \text{ tens} \\ \hline \end{array} \quad \begin{array}{r} - 30 \\ \hline \end{array}$$

7. 4 tens from 7 tens is ? tens.

$$\begin{array}{r} 7 \text{ tens} \\ 70 \end{array}$$

40 from 70 is ? .

$$\begin{array}{r} - 4 \text{ tens} \\ \hline \end{array} \quad \begin{array}{r} - 40 \\ \hline \end{array}$$

8. 2 tens from 7 tens is ? tens.

$$\begin{array}{r} 7 \text{ tens} \\ 70 \end{array}$$

20 from 70 is ? .

$$\begin{array}{r} - 2 \text{ tens} \\ \hline \end{array} \quad \begin{array}{r} - 20 \\ \hline \end{array}$$

9. Try climbing up and down the number ladder by yourself. Maybe you would like to climb above 100 to see what it is like up there.

Adding and subtracting by tens

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

1. On the chart find the number that is 10 more than 30.
3 tens and 1 ten are ? tens. $30 + 10 = \underline{\quad}$.

2. Find the number that is 2 tens more than 30; than 70;
than 60; than 80; than 20.

3. Find 80. Take away 1 ten; 2 tens; 3 tens. 8 tens
 $- 3 \text{ tens} = \underline{\quad}$ tens. $80 - 30 = \underline{\quad}$.

Use the number chart to find these answers:

4. $\begin{array}{r} 70 \\ + 20 \\ \hline \end{array}$ $\begin{array}{r} 70 \\ - 30 \\ \hline \end{array}$ $\begin{array}{r} 30 \\ + 30 \\ \hline \end{array}$ $\begin{array}{r} 50 \\ - 30 \\ \hline \end{array}$ $\begin{array}{r} 60 \\ + 20 \\ \hline \end{array}$ $\begin{array}{r} 90 \\ - 50 \\ \hline \end{array}$

5. $4 + 3 = \underline{\quad}$ 4 tens + 3 tens = ? tens $40 + 30 = \underline{\quad}$

6. $3 + 6 = \underline{\quad}$ 3 tens + 6 tens = ? tens $30 + 60 = \underline{\quad}$

7. $8 - 5 = \underline{\quad}$ 8 tens - 5 tens = ? tens $80 - 50 = \underline{\quad}$

8. $7 - 4 = \underline{\quad}$ 7 tens - 4 tens = ? tens $70 - 40 = \underline{\quad}$

Dimes and tens

1. Yesterday Jack earned 3 dimes. Today he earned 2 dimes. All together he earned ? dimes.

2.	3 dimes	3 tens	30
	<u>+ 2 dimes</u>	<u>+ 2 tens</u>	<u>+ 20</u>
	? dimes	? tens	?

3. If you know that $5 + 2 = 7$, then you know that $5 \text{ tens} + 2 \text{ tens} = \underline{\quad} \text{ tens}$, and $50 + 20 = \underline{\quad}$.

4. Marie had 5 dimes. She spent 2 dimes. Then she had ? dimes left.

5.	5 dimes	5 tens	50
	<u>- 2 dimes</u>	<u>- 2 tens</u>	<u>- 20</u>
	? dimes	? tens	?

6. If you know that $9 - 5 = 4$, then you know that $9 \text{ tens} - 5 \text{ tens} = \underline{\quad} \text{ tens}$, and $90 - 50 = \underline{\quad}$.

7. Jane had 30¢. Her mother gave her 50¢ more. How much did Jane have then? Prove you are right.

8. Peter had 80¢. He lost 50¢. How much did he have left? Prove you are right.

Tell these answers. Then write them on folded paper.

9.	40	60	80	70	40	50
	<u>+ 20</u>	<u>+ 30</u>	<u>+ 10</u>	<u>+ 20</u>	<u>+ 30</u>	<u>+ 30</u>
10.	60	90	90	70	80	90
	<u>- 20</u>	<u>- 30</u>	<u>- 10</u>	<u>- 30</u>	<u>- 30</u>	<u>- 20</u>

Copy and find the answers:

11. $30 + 40$	$50 + 20$	$30 + 60$	$40 + 20$
12. $60 - 40$	$90 - 40$	$80 - 60$	$70 - 30$

Adding dimes and cents

1. Don had 13¢: →  and 

Don earned 32¢: →  and 

In all, Don had ? dimes and ? pennies, or 45¢. His coins show that $13¢ + 32¢ = \underline{\hspace{1cm}}¢$.

2. With the help of pictures, you have just seen that the sum of 13¢ and 32¢ is 45¢. Here is another way to find $13¢ + 32¢$. Explain the addition.

$$\begin{array}{l} 13¢ = 1 \text{ dime and } 3 \text{ cents} \\ 32¢ = 3 \text{ dimes and } 2 \text{ cents} \\ \hline 4 \text{ dimes and } 5 \text{ cents} = 45¢ \end{array}$$

Use toy money (dimes and pennies) to do Exs. 3 to 10.

3. Jim needs 14¢ for bus fare and 25¢ for lunch. How much money does he need all together?

4. Mary had 43¢ in her bank. Her father gave her 25¢. How much money did she have then?

5. Judy earned 35¢ yesterday. She earned 24¢ today. How much did she earn on both days?

6. Show that $27¢ + 12¢ = 3 \text{ dimes and } 9 \text{ cents}$, or 39¢.

7. Show that $35¢ + 23¢ = 5 \text{ dimes and } 8 \text{ cents}$, or 58¢.

8. Show that $62¢ + 17¢ = 7 \text{ dimes and } 9 \text{ cents}$, or 79¢.

9. Show that $51¢ + 25¢ = 7 \text{ dimes and } 6 \text{ cents}$, or 76¢.

10. Show that $34¢ + 52¢ = 8 \text{ dimes and } 6 \text{ cents}$, or 86¢.

11. Now tell how to do Exs. 6 to 10 without the help of toy money.



Adding two-place numbers

1. Joan wants to buy her bird a perch and a swing. She wonders how much money she needs. How many dimes does she need? How many pennies? How many cents in all?

► To add 14¢ and 32¢, write the example:—→

$$\begin{array}{r} 14¢ \\ 32¢ \\ \hline \end{array}$$

► Then think, “4 cents and 2 cents are 6 cents.” Write the 6 in the cents column under the 4 and 2.

Does the 6 show how many pennies Joan needs?

► Next think, “1 dime and 3 dimes are 4 dimes.” Write 4 in the dimes column under the 1 and 3.

Does the 4 show how many dimes Joan needs?

Joan needs ? ¢ to buy the perch and swing.

$$\begin{array}{r} 14¢ \\ 32¢ \\ \hline 46¢ \end{array}$$

2. Peter had 32¢. Then he found a quarter. How much money did he have then?

3. Sue says the sum of 43¢ and 26¢ is 69¢. Is she right?

Copy and add:

- | | | | | | | | |
|----|---|---|---|---|---|---|---|
| 4. | $\begin{array}{r} 61¢ \\ 32¢ \\ \hline \end{array}$ | $\begin{array}{r} 14¢ \\ 55¢ \\ \hline \end{array}$ | $\begin{array}{r} 25¢ \\ 31¢ \\ \hline \end{array}$ | $\begin{array}{r} 74¢ \\ 13¢ \\ \hline \end{array}$ | $\begin{array}{r} 13¢ \\ 16¢ \\ \hline \end{array}$ | $\begin{array}{r} 45¢ \\ 52¢ \\ \hline \end{array}$ | $\begin{array}{r} 37¢ \\ 32¢ \\ \hline \end{array}$ |
| 5. | $\begin{array}{r} 74¢ \\ 24¢ \\ \hline \end{array}$ | $\begin{array}{r} 23¢ \\ 54¢ \\ \hline \end{array}$ | $\begin{array}{r} 54¢ \\ 42¢ \\ \hline \end{array}$ | $\begin{array}{r} 65¢ \\ 23¢ \\ \hline \end{array}$ | $\begin{array}{r} 33¢ \\ 52¢ \\ \hline \end{array}$ | $\begin{array}{r} 62¢ \\ 16¢ \\ \hline \end{array}$ | $\begin{array}{r} 27¢ \\ 21¢ \\ \hline \end{array}$ |

Adding two-place numbers

1. There are 15 girls and 12 boys in Miss Hill's class. Miss Hill wants to give each child a card. Jack and Molly added to find how many cards are needed. Explain each one's work. Which way is the easiest to write?

MOLLY'S WAY

15 cards = 1 ten and 5 ones
 12 cards = 1 ten and 2 ones
 Cards for all = 2 tens and 7 ones = 27

JACK'S WAY

15 cards
 + 12 cards
 27 cards

2. Jane needs a yard of lace for a doll's dress and 12 inches more for a cap. How many inches does she need in all?

3. Joe has 2 boxes of cupcakes. There are 12 in each box. Write an addition to show how many cakes he has.

4. Explain these additions. Copy them without the answers and add.

43	52	68	45	34	56	73
25	22	11	31	14	31	21
68	74	79	76	48	87	94

Copy and add. Begin at the top each time.

5. 58	37	24	61	86	42	64
41	32	12	31	12	31	34

6. 52¢	61¢	43¢	18¢	42¢	34¢	42¢
33¢	22¢	24¢	71¢	47¢	25¢	16¢

7. David wants a cowboy hat which costs 45¢, and a 34-cent belt. How much will both cost?

8. Find out if each answer in Exs. 5 and 6 is right by *seeing in your mind* a number ladder.

Subtracting dimes and cents

1. Sally has 2 dimes and 8 pennies. She has ? ¢ in all.



Special Today
Sodas 13¢



Sally is buying an ice-cream soda. The soda will cost 13¢. 13¢ = ? dime and ? pennies.

The picture of her money is shown below. She has crossed off the 1 dime and 3 pennies she will spend.



The picture shows she will have left ? dime and ? pennies, or ? ¢. 13¢ from 28¢ is ? ¢.

2. To subtract 13¢ from 28¢:

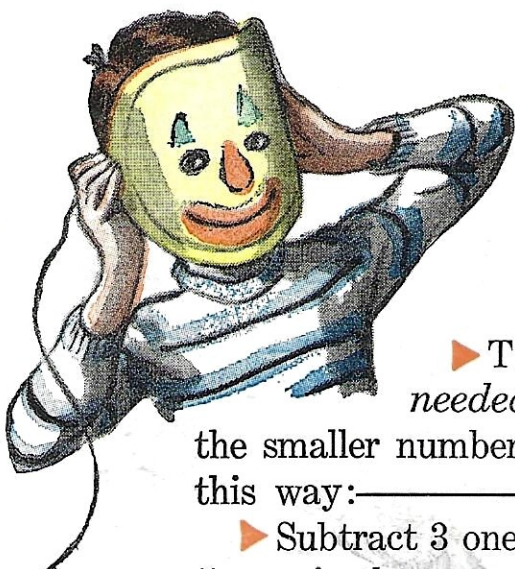
<i>You write</i>	<i>You think</i>
28¢ = 2 dimes and 8 cents	3 cents from 8 cents is <u> ? </u> cents.
– 13¢ = – 1 dime and 3 cents	1 dime from 2 dimes is <u> ? </u> dime.
? dime and ? cents	13¢ from 28¢ is <u> ? </u> ¢.

3. Use toy money (dimes and cents) to find these answers:

49¢	78¢	69¢	56¢	87¢	97¢	74¢
– 13¢	– 53¢	– 47¢	– 23¢	– 44¢	– 62¢	– 64¢

4. To subtract 13 from 28:

<i>You write</i>	<i>You think</i>
28 = 2 tens and 8 ones	3 ones from 8 ones is <u> ? </u> ones.
– 13 = – 1 ten and 3 ones	1 ten from 2 tens is <u> ? </u> ten.
? ten and ? ones	13 from 28 is <u> ? </u> .



Subtracting tens and ones

The 28 children in Miss Beck's class are making paper-plate false faces. They have 13 plates. How many more plates do they need?

▶ To find *how many more are needed*, you subtract. Write the smaller number under the larger number this way: $\longrightarrow$

$$\begin{array}{r} 28 \\ -13 \\ \hline \end{array}$$

▶ Subtract 3 ones from 8 ones. Write the 5 ones in the ones column under the 8 and 3.

▶ Subtract 1 ten from 2 tens. Write the 1 ten in the tens column under the 2 and 1.

▶ How many more plates are needed?

$$\begin{array}{r} 28 \\ -13 \\ \hline 15 \end{array}$$

Explain the subtractions in Ex. 1.

1.	$\begin{array}{r} 46 \\ 25 \\ \hline 21 \end{array}$	$\begin{array}{r} 79 \\ 64 \\ \hline 15 \end{array}$	$\begin{array}{r} 95 \\ 21 \\ \hline 74 \end{array}$	$\begin{array}{r} 56 \\ 24 \\ \hline 32 \end{array}$	$\begin{array}{r} 95 \\ 53 \\ \hline 42 \end{array}$	$\begin{array}{r} 38 \\ 26 \\ \hline 12 \end{array}$	$\begin{array}{r} 67 \\ 25 \\ \hline 42 \end{array}$	$\begin{array}{r} 48 \\ 13 \\ \hline 35 \end{array}$
----	--	--	--	--	--	--	--	--

Subtract. Write the answers on folded paper.

2.	$\begin{array}{r} 89 \\ 28 \\ \hline \end{array}$	$\begin{array}{r} 48 \\ 35 \\ \hline \end{array}$	$\begin{array}{r} 27 \\ 14 \\ \hline \end{array}$	$\begin{array}{r} 69 \\ 37 \\ \hline \end{array}$	$\begin{array}{r} 98 \\ 57 \\ \hline \end{array}$	$\begin{array}{r} 87 \\ 52 \\ \hline \end{array}$	$\begin{array}{r} 97 \\ 61 \\ \hline \end{array}$	$\begin{array}{r} 98 \\ 72 \\ \hline \end{array}$
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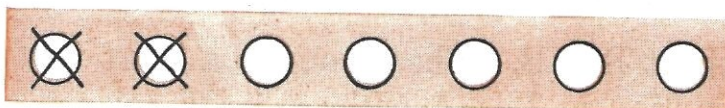
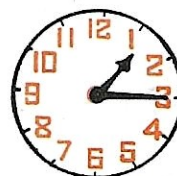
3.	$\begin{array}{r} 39 \\ 13 \\ \hline \end{array}$	$\begin{array}{r} 98 \\ 34 \\ \hline \end{array}$	$\begin{array}{r} 77 \\ 23 \\ \hline \end{array}$	$\begin{array}{r} 99 \\ 24 \\ \hline \end{array}$	$\begin{array}{r} 98 \\ 61 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ 64 \\ \hline \end{array}$	$\begin{array}{r} 79 \\ 41 \\ \hline \end{array}$	$\begin{array}{r} 86 \\ 31 \\ \hline \end{array}$
----	---	---	---	---	---	---	---	---

4. Do Exs. 2 and 3 by *seeing in your mind* a number ladder. Think, "20 taken from 89 brings you down to 69; and 8 more taken away brings you down to 61."

Put on your thinking cap

► Oral review

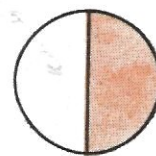
- Count to 100 by 10's; by 5's; by 2's; by 1's.
- Which is the larger, 79 or 97? 62 or 56?
- Here is Johnny. Name the shapes of the parts of his body. —————→
- Name in order the months of the year.
- Does $4 + 5 = 5 + 4$?
- What time is it by this clock?
- What number fact does this picture show?



- What does 7 A.M. mean? 8 P.M.?
- $1 \text{ yd.} = \underline{\quad ? \quad} \text{ in.}$
 $1 \text{ ft.} = \underline{\quad ? \quad} \text{ in.}$
 $1 \text{ yd.} = \underline{\quad ? \quad} \text{ ft.}$
- $1 \text{ quarter} = \underline{\quad ? \quad} \text{ cents}$
 $1 \text{ quarter} = \underline{\quad ? \quad} \text{ nickels}$
 $1 \text{ qt.} = \underline{\quad ? \quad} \text{ pt.}$

► Written review

- $$\begin{array}{r} 53 \\ + 34 \\ \hline \end{array}$$
- $$\begin{array}{r} 27 \\ + 62 \\ \hline \end{array}$$
- $$\begin{array}{r} 89 \\ - 64 \\ \hline \end{array}$$
- $$\begin{array}{r} 75 \\ - 32 \\ \hline \end{array}$$
- $$\begin{array}{r} 94 \\ - 62 \\ \hline \end{array}$$
- $$\begin{array}{r} 86 \\ - 32 \\ \hline \end{array}$$
- $6¢ + 4¢ = \underline{\quad ? \quad}¢$; $10¢ - 7¢ = \underline{\quad ? \quad}¢$; $9¢ - 4¢ = \underline{\quad ? \quad}¢$
- Write the number that means 3 tens and 9.
- What part of this ball is red? Write your answer in figures.



Checking subtraction

1. Use toy coins (4 dimes and 8 pennies) to do the subtraction in Box A. When you take 35¢ from 48¢, you have ? ¢ left.

A THE SUBTRACTION	
Bill had at first	48¢
Bill spent	– 35¢
Bill had left	13¢

B THE CHECK	
Bill had left	13¢
Bill spent	+ 35¢
Bill had at first	48¢

2. Now use the same toy coins to prove the answer to your subtraction in Ex. 1. Put the 13¢ Bill had left and the 35¢ he spent back together again. You should have the ? ¢ he had at first. Do you?

3. Look at Box B. There you see a short way to prove the subtraction in Box A without using coins.

Add the 13¢ Bill had left and the 35¢ he spent. Does the sum equal the 48¢ he had at first? If so, 13¢ is the right answer. Why?

In Box B you found that 13¢ is the right answer. You *checked* the subtraction. Can you make up a rule for checking a subtraction?

Peter did these subtractions and checked them. By *checking* he found that one subtraction is *wrong*. Find it. Copy it, subtract correctly, and check.

4. CHECK

56	32
– 24	+ 24
32	56

5. CHECK

79	44
– 35	+ 35
44	79

6. CHECK

87	43
– 34	+ 34
43	77

Phil did these subtractions. Two are wrong. Check to find the two that are *wrong*. Copy them, subtract correctly, and check.

$$\begin{array}{r}
 1. \quad \begin{array}{r} 68 \\ - 44 \\ \hline 24 \end{array} \quad \begin{array}{r} 95 \\ - 32 \\ \hline 63 \end{array} \quad \begin{array}{r} 85 \\ - 73 \\ \hline 12 \end{array} \quad \begin{array}{r} 48 \\ - 16 \\ \hline 32 \end{array} \quad \begin{array}{r} 52 \\ - 21 \\ \hline 21 \end{array} \quad \begin{array}{r} 77 \\ - 45 \\ \hline 32 \end{array} \quad \begin{array}{r} 98 \\ - 45 \\ \hline 52 \end{array}
 \end{array}$$

Subtract and check:

$$2. \quad \begin{array}{r} 24 \\ - 13 \\ \hline \end{array} \quad \begin{array}{r} 56 \\ - 25 \\ \hline \end{array} \quad \begin{array}{r} 84 \\ - 63 \\ \hline \end{array} \quad \begin{array}{r} 73 \\ - 21 \\ \hline \end{array} \quad \begin{array}{r} 36 \\ - 14 \\ \hline \end{array} \quad \begin{array}{r} 49 \\ - 26 \\ \hline \end{array} \quad \begin{array}{r} 68 \\ - 33 \\ \hline \end{array}$$

$$3. \quad \begin{array}{r} 98 \\ - 57 \\ \hline \end{array} \quad \begin{array}{r} 76 \\ - 44 \\ \hline \end{array} \quad \begin{array}{r} 54 \\ - 31 \\ \hline \end{array} \quad \begin{array}{r} 39 \\ - 26 \\ \hline \end{array} \quad \begin{array}{r} 58 \\ - 12 \\ \hline \end{array} \quad \begin{array}{r} 74 \\ - 52 \\ \hline \end{array} \quad \begin{array}{r} 69 \\ - 32 \\ \hline \end{array}$$

Subtract and check. Do not use a pencil.

$$4. \quad 90 - 70 \qquad 60 - 30 \qquad 50 - 40 \qquad 70 - 20$$

$$5. \quad 80 - 50 \qquad 90 - 10 \qquad 90 - 60 \qquad 80 - 40$$

Check your answer to each subtraction problem below:

6. Molly has 95¢. If she spends 32¢, she has ? left.

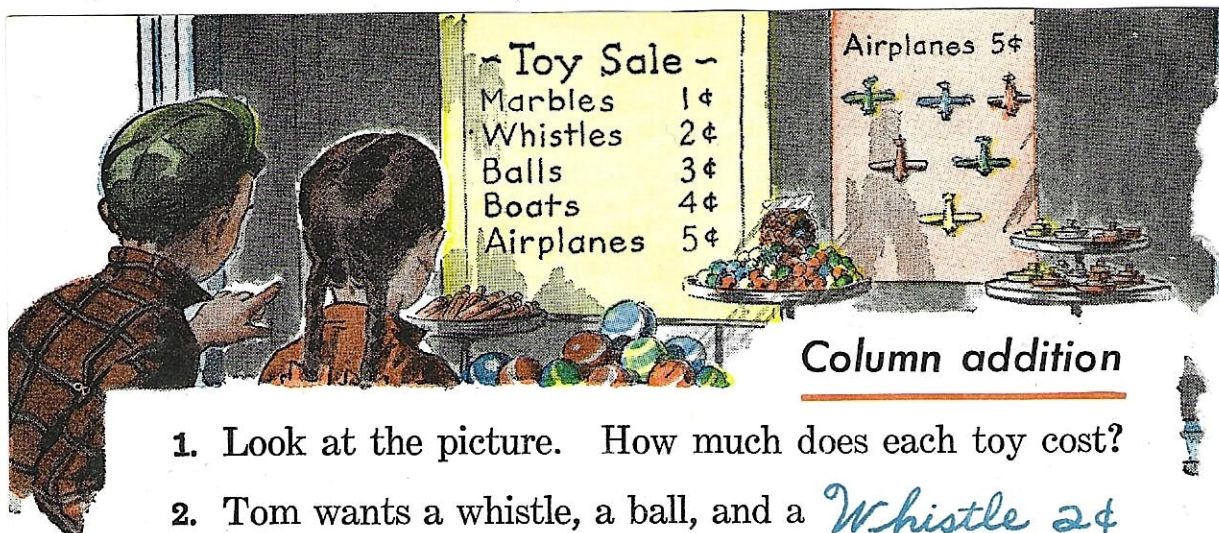
7. Bill has a quarter. He wants to buy a game that costs 49¢. How much more money does he need?

8. Tom weighs 69 pounds. Ann weighs 58 pounds. Tom is ? pounds heavier than Ann.

9. Jim earned 43¢ on Monday. He earned 35¢ on Tuesday. All together he earned ?¢.

10. Mary has 2 red pencils, 5 green pencils, and 3 yellow pencils. How many pencils has she in all?

11. There are 28 children in Miss Green's class. Today only 23 children are present. How many are absent?



Column addition

1. Look at the picture. How much does each toy cost?

2. Tom wants a whistle, a ball, and a boat. How much will the three toys cost?

To find the cost of the three toys, Tom wrote the addition like this: —————→

$$\begin{array}{r}
 \text{Whistle } 2¢ \\
 \text{Ball } 3¢ \\
 \text{Boat } 4¢ \\
 \hline
 9¢
 \end{array}$$

He thought, " $2¢ + 3¢ = 5¢$; $5¢ + 4¢ = ?¢$."

A whistle, a ball, and a boat will cost $?¢$.

Add. Begin at the top.

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>j</i>
3.	2	6	4	5	4	1	2	1	2	3
	4	1	3	1	4	3	4	7	5	1
	<u>3</u>	<u>2</u>	<u>1</u>	<u>3</u>	<u>1</u>	<u>5</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>4</u>
4.	3	2	5	4	4	6	4	5	6	4
	3	3	2	2	1	1	1	4	2	1
	<u>3</u>	<u>4</u>	<u>2</u>	<u>4</u>	<u>5</u>	<u>3</u>	<u>3</u>	<u>1</u>	<u>2</u>	<u>4</u>

5. Use the picture above to find the cost of:

a plane, a marble, a whistle

a whistle and 2 boats

a boat, a plane, a marble

a plane and 2 marbles

a ball, a whistle, a plane

a boat and 2 whistles

6. Joe has 2 red pencils, 4 blue pencils, and 3 black pencils. How many pencils has he in all?

Checking addition

1. Mary made 1 airplane. Tom made 4. Dick made 5.
How many airplanes did they make in all?

Write the example like this: →

Add. Begin at the top.

Think: $1 + 4 = 5$; $5 + 5 = \underline{\quad ? \quad}$

$$\begin{array}{r} 1 \\ 4 \\ + 5 \\ \hline \end{array}$$

To see if 10 is the right answer,
add again. This time *begin at the bottom* and add up.
Think: $5 + 4 = 9$; $9 + 1 = \underline{\quad ? \quad}$

Did you get 10 for the answer again? If so, you have
checked your addition. Why should you always check?

2. Jane made 24 chocolate cookies and 32 nut cookies.
How many cookies did she make all together?

Write the example like this: →

Begin at the top.

Add the ones. Think: $4 + 2 = 6$

Add the tens. Think: $2 + 3 = 5$

Jane made $\underline{\quad ? \quad}$ cookies.

$$\begin{array}{r} 24 \\ + 32 \\ \hline \end{array}$$

Now check the answer to see if it is right.

Begin at the bottom.

Add the ones. Think: $2 + 4 = 6$

Add the tens. Think: $3 + 2 = 5$

Again you find that Jane made $\underline{\quad ? \quad}$ cookies.

Add and check:

3.	$\begin{array}{r} 6 \\ 2 \\ \underline{1} \end{array}$	$\begin{array}{r} 3 \\ 4 \\ \underline{3} \end{array}$	$\begin{array}{r} 4 \\ 1 \\ \underline{4} \end{array}$	$\begin{array}{r} 1 \\ 5 \\ \underline{2} \end{array}$	$\begin{array}{r} 3 \\ 4 \\ \underline{2} \end{array}$	$\begin{array}{r} 2 \\ 3 \\ \underline{2} \end{array}$	$\begin{array}{r} 4 \\ 1 \\ \underline{3} \end{array}$
----	--	--	--	--	--	--	--

4.	$\begin{array}{r} 32 \\ \underline{42} \end{array}$	$\begin{array}{r} 38 \\ \underline{51} \end{array}$	$\begin{array}{r} 21 \\ \underline{16} \end{array}$	$\begin{array}{r} 45 \\ \underline{23} \end{array}$	$\begin{array}{r} 36 \\ \underline{42} \end{array}$	$\begin{array}{r} 74 \\ \underline{21} \end{array}$	$\begin{array}{r} 42 \\ \underline{53} \end{array}$
----	---	---	---	---	---	---	---

Adding zeros

1. The third-grade pupils were playing ring toss. Tom first threw 3 rings on the peg. So his first score was 3.

His next turn he did not get any rings on the peg. So his second score was *zero*. *Zero* means *not any* or *none*. It is written 0.

$$\begin{array}{r} 3 \\ + 0 \\ \hline 3 \end{array}$$

All together Tom threw $3 + 0$, or $\underline{\quad}$, rings on the peg.

2. How many rings did each of these pupils get on the peg on the first turn? on the second turn? on both turns?

Ann Bob Don Mary Jack Dick

3	2	0	1	2	0
$+ 2$	$+ 0$	$+ 2$	$+ 3$	$+ 3$	$+ 0$
$\hline$	$\hline$	$\hline$	$\hline$	$\hline$	$\hline$

3. $7 + 0 = \underline{\quad}$	4. $8 + 0 = \underline{\quad}$	5. $9 + 0 = \underline{\quad}$
$0 + 7 = \underline{\quad}$	$0 + 8 = \underline{\quad}$	$0 + 9 = \underline{\quad}$

6. At the right are Billy's three scores on a number game. To find his total score, Billy thought:

$$7 + 0 = 7; \quad 7 + 3 = \underline{\quad}$$

$$\begin{array}{r} 7 \\ 0 \\ + 3 \\ \hline \end{array}$$

7. Tell what you think when you check Billy's score.

8. Find the total score of each of the following. Check.

Jean Susan Jack Jerry Carl Jim Tom

3	4	2	0	3	5	0
0	0	0	4	5	4	1
$\underline{4}$	$\underline{2}$	$\underline{5}$	$\underline{3}$	$\underline{0}$	$\underline{0}$	$\underline{0}$

9. When Jean found her score in Ex. 8, she thought, "3 and 4 are 7." She skipped the zero. Why?

10. Make a rule for finding the sum of zero and any number.

1. Susan spent 30¢ for a ball and 42¢ for a bat. To find how much she spent for both, Susan wrote: $\longrightarrow$

30¢ = 3 dimes 0 cents

42¢ = 4 dimes 2 cents

7 dimes 2 cents = 72¢

Explain Susan's addition. She spent ? cents for the ball and bat.

2. Susan could have used this short way to add 30 cents and 42 cents: $\longrightarrow$

0 cents + 2 cents = ? cents.

3 dimes + 4 dimes = ? dimes.

She spent ? ¢ in all.

30¢
+ 42¢
72¢

3. Dan read 15 pages of a storybook yesterday and 10 pages today. To find how many pages he has read in two days, do this addition: $\longrightarrow$

15
+ 10
25

5 ones + 0 ones = 5 ones; write the 5 in the ones column.

1 ten + 1 ten = 2 tens; write the 2 in the tens column.

In 2 days he has read ? pages. Check the addition.

Tell what addition facts you use to find these sums; to check the sums.

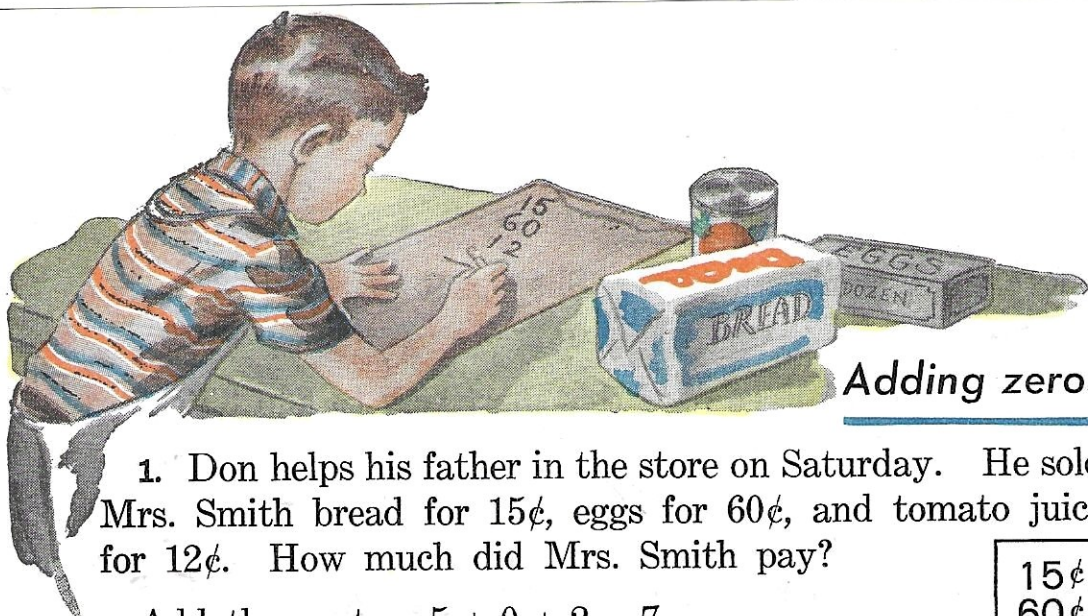
4. 23	40	36	28	70	53	30	46
<u>20</u>	<u>25</u>	<u>50</u>	<u>60</u>	<u>12</u>	<u>20</u>	<u>68</u>	<u>50</u>

5. Copy Ex. 4. Add and check.

Add. Do not use a pencil.

6. 20	30	10	50	70	40	30	60
<u>40</u>	<u>15</u>	<u>45</u>	<u>40</u>	<u>21</u>	<u>18</u>	<u>42</u>	<u>29</u>

7. Write an addition which shows the sum of a quarter and a dime.



Adding zeros

1. Don helps his father in the store on Saturday. He sold Mrs. Smith bread for 15¢, eggs for 60¢, and tomato juice for 12¢. How much did Mrs. Smith pay?

Add the cents. $5 + 0 + 2 = 7$

Write 7 in the cents column.

Add the dimes. $1 + 6 + 1 = 8$

Write 8 in the dimes column. Mrs. Smith spent ? cents.

15¢
60¢
12¢
87¢

2. Mary helped Miss Bell check the school supplies. She counted 30 reading books, 20 spelling books, and 25 arithmetic books. How many books did she count?

Add the ones. $0 + 0 + 5 = 5$

Add the tens. $3 + 2 + 2 = 7$

Mary counted ? books.

30
20
25
75

Use toy money to prove these examples are right:

3.	25¢	40¢	16¢	30¢	20¢	20¢	12¢	43¢
	20¢	10¢	30¢	15¢	50¢	30¢	27¢	20¢
	+ 40¢	30¢	22¢	50¢	20¢	48¢	40¢	35¢
	<u>85¢</u>	<u>80¢</u>	<u>68¢</u>	<u>95¢</u>	<u>90¢</u>	<u>98¢</u>	<u>79¢</u>	<u>98¢</u>

Copy, add, and check. Then do them without a pencil.

4.	23	10	73	30	45	40	30	50
	24	49	10	50	13	20	35	24
	<u>30</u>	<u>30</u>	<u>12</u>	<u>10</u>	<u>20</u>	<u>30</u>	<u>22</u>	<u>12</u>

Subtracting zeros

1. Tom had 5 cents; he spent 4 cents; he had ?¢ left.
2. Jane had 5 cents; she spent 5 cents; she had ?¢ left.
3. Carl had 5 cents; he spent 0 cents; he had ?¢ left.
4. Think of some number. Now subtract 0 from it.
What is your answer?

Make a rule about subtracting zero from any number.

5. Peter had 68 cents. He spent 40 cents. Here is one way to subtract to find how many cents he had left:

You write

$$68¢ = 6 \text{ dimes } 8 \text{ cents}$$

$$40¢ = 4 \text{ dimes } 0 \text{ cents}$$

$$2 \text{ dimes } 8 \text{ cents} = 28¢$$

You think

$$8 \text{ cents} - 0 \text{ cents} = \underline{\hspace{1cm}} \text{ cents}$$

$$6 \text{ dimes} - 4 \text{ dimes} = \underline{\hspace{1cm}} \text{ dimes}$$

$$\text{Peter had } \underline{\hspace{1cm}} \text{¢ left.}$$

6. Explain this shorter way to find $68¢ - 40¢$: $\rightarrow$

7. Check the subtraction in Ex. 6.

8. John had 56 marbles. He lost some.

Now he has only 20. Here is one way to subtract to find out how many he lost:

You write

$$56 = 5 \text{ tens } 6 \text{ ones}$$

$$20 = 2 \text{ tens } 0 \text{ ones}$$

$$3 \text{ tens } 6 \text{ ones} = 36$$

You think

$$6 \text{ ones} - 0 \text{ ones} = \underline{\hspace{1cm}} \text{ ones}$$

$$5 \text{ tens} - 2 \text{ tens} = \underline{\hspace{1cm}} \text{ tens}$$

$$\text{Peter lost } \underline{\hspace{1cm}} \text{ marbles.}$$

9. Explain this shorter way to find $56 - 20$: $\rightarrow$

Copy, subtract, and check:

10.	38	57	89	67	98	87	40	58
	<u>- 10</u>	<u>- 20</u>	<u>- 40</u>	<u>- 50</u>	<u>- 70</u>	<u>- 70</u>	<u>- 30</u>	<u>- 50</u>

11. Now do Ex. 10 without using a pencil.

68¢
-40¢
28¢

56
-20
36

Problem Test 2

1. Don had a pet show. There were 4 dogs, 3 cats, and 1 goat. How many pets were in the show?

2. The table in Miss Hill's room is 1 yard and 12 inches long. The class wants a tablecloth to cover it for a party. Molly can bring a cloth 50 inches long. Is that long enough?

3. Here is a picture of Jane's money. Can she buy a 25-cent comb?

4. There are 20 children in one class and 22 in another. How many are there in both classes?

5. Sue earned 9¢ last week. She put 5¢ in her bank. How much did she keep out to spend?

6. Jean wants a 28-cent doll. She has 15¢. She needs ? ¢ more.



7. There are 97 children in a camp. 63 are boys. How many are girls?

8. Dick wants to practice his music for 20 minutes. If he begins at 5 minutes after 8, when will he finish?

9.
$$\begin{array}{r} 12 \text{ months} \\ + 12 \text{ months} \\ \hline 24 \text{ months} \end{array}$$
 This addition shows there are 24 months in ? years.

10. Ted wants 3 quarts of ice cream. The ice cream comes in pint bricks. How many pints should he buy?

What is your mark on Problem Test 2? Get out your Problem Test Record. Fill it in for Test 2.

Self-Help Test 1

If you make mistakes in a Self-Help Test, you can help yourself. If you make a mistake in Ex. 1 on this test, you can find help on page 46. Where can you find help for Ex. 2?

Copy, find the answers, and check:

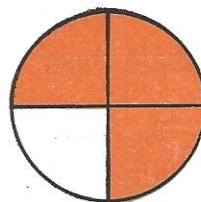
1. $\begin{array}{r} 46 \\ + 32 \\ \hline \end{array}$ (46)
2. $\begin{array}{r} 93¢ \\ - 62¢ \\ \hline \end{array}$ (47-48)
3. $35 + 40$ (55)
4. $79 - 52$ (48)
5. Which number is larger, 57 or 75? (16-17)
6. Write the numbers from 88 to 92. (16-17)
7. What number means 8 tens and 4? (14-15)
8. What number is 10 larger than 35? than 29? (16-17)
9. Find the sum of 2, 0, and 3. (54)
10. Which of these is a square? a circle? a rectangle?
a clock face a page of this book a paper napkin (10)

Self-Help Test 2

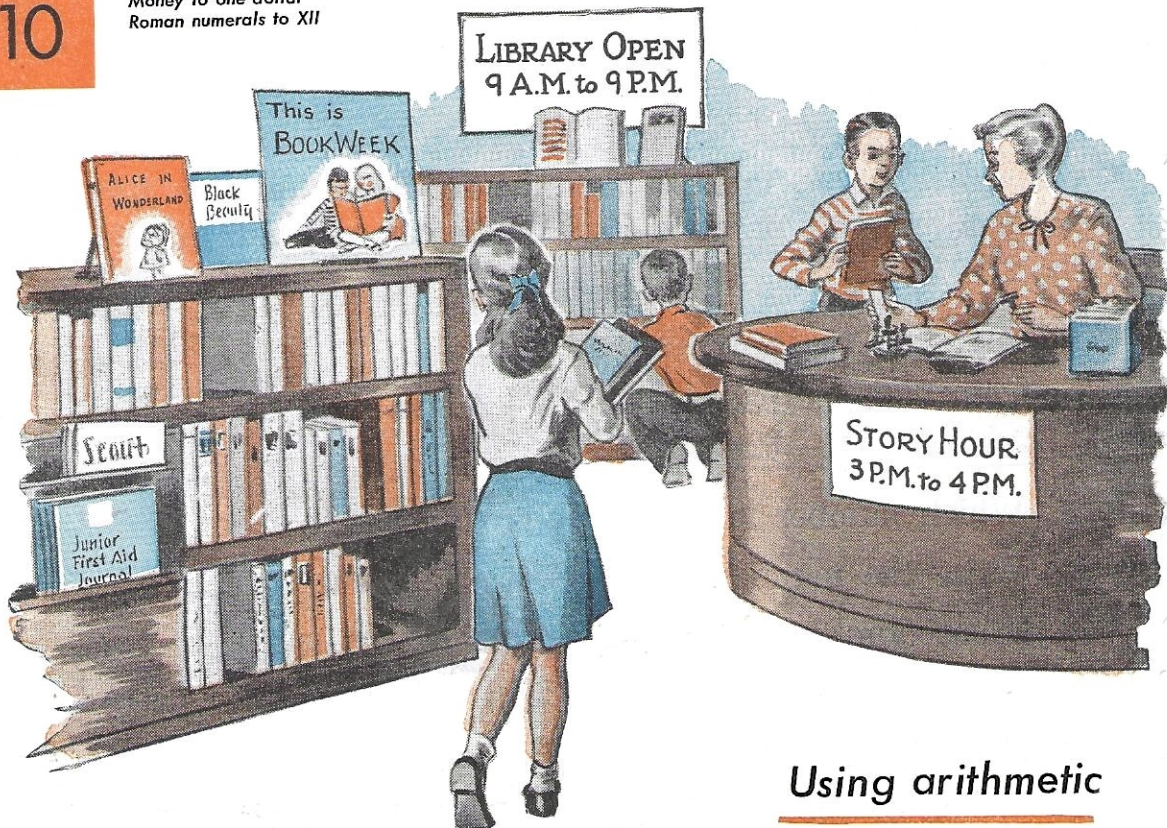
1. What part of this circle is white? Write your answer in figures. (11)

2. Which might show a baby's height?

22 pints; 22 pounds; 22 inches. (24-25)



3. 1 ft. = ? in. (25)
4. 1 yd. = ? ft. (25)
5. 1 yd. = ? in. (25)
6. 1 qt. = ? pt. (28)
7. 1 pint = ? glasses (28)
8. 1 hour = ? minutes (3)
9. 1 dime = ? cents (4)
10. 1 quarter = ? cents (4)



Using arithmetic

1. Miss Stone's class is going to visit the Public Library. It is 14 blocks to the library from their school. If the children walk to the library and back, how many blocks will they walk?
2. The bus fare is 5¢. If the class rides to the library and back, how much money will each child need?
3. The class decided to walk to the library and ride back. Each child will need ? cents. He will have to walk ? blocks.
4. The children brought notes from home saying that they might go on the trip. Andy counted the notes. At first there were only 15. There were 20 children in the class. How many notes were missing?



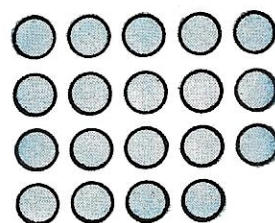
5. Sue counted the nickels the children brought. There were 19 nickels.

She placed the 19 nickels like this:—→

Then she counted, “5, 10, 15, . . . 95.”

Sue said, “We have 95 cents.”

Do you agree that they had 95 cents?



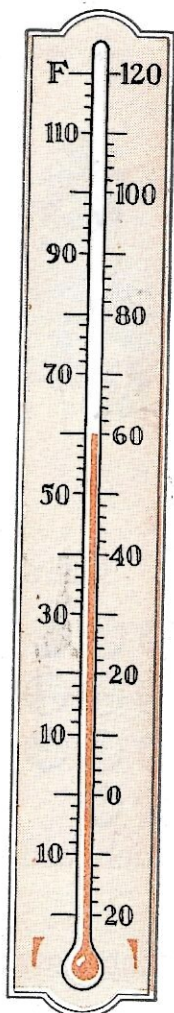
6. When the last child brings his nickel, how much will they have?

7. Look at the picture. Then use your clock to find how many hours the library is open each day.

8. Look at the picture to see when the story hour starts. It takes half an hour to walk to the library. At what time should the class leave school to reach the library in time to hear the story?

9. Do you belong to a library? How long may you keep a book out of your library? Do you pay a fine if you do not return a book on time? Make up some arithmetic problems about using the library.

Hot or cold



One morning when Betsy came into the classroom, she said, "It's cold in here, Miss Hart."

"Yes, it is cold," said Miss Hart. "Look at the thermometer. What is the temperature?"

Betsy looked at the thermometer. The top of the red liquid was at the line marked 60. The thermometer looked like the one shown here.

"Oh," said Betsy. "No wonder I'm cold! It's 60 degrees in here."

"Well, please go to the janitor's room and ask if we can have more heat," said Miss Hart.

Very soon the radiator began to sizzle. When Betsy looked at the thermometer again, the top of the red liquid was one line below 70.

"That means the temperature is 68 degrees. That's just what it should be," said Miss Hart.

About 11 o'clock, Paul asked, "May I open a window? I'm too hot. It's 74 degrees in here."

"We'll turn the radiator off. The room will cool down to 68 degrees again," said Miss Hart.

You use a thermometer to tell how hot or cold the air is. With it you measure the temperature of the air.

Temperature is measured in *degrees*. 68 degrees is written like this: 68°. The little circle means degrees. The numbers on a thermometer stand for degrees.

Is there a weather report in your newspaper? What was the lowest temperature yesterday? the highest? How much did the temperature change yesterday?

1. Read the thermometer in your classroom. What is the temperature? Are you warm enough?

2. Place the thermometer outside your window. What will happen to it? Check to see if you are right.

3. What is the temperature outdoors? Did you need to wear a coat to school this morning?

4. Show where the top of the red liquid is when the temperature is 0° ; 10° ; 20° ; 30° ; 40° ; 50° ; 60° .

5. What temperature is 10° higher than 20° ? 50° ? 70° ?

6. What is the temperature if it falls 10° from 90° ? from 80° ? 70° ? 60° ? 50° ? 40° ? 30° ? 20° ? 10° ?

7. Peter said, "A thermometer is just like a number ladder, except that it goes up by 2's instead of by 1's." Tell what Peter meant.

8. Show where the top of the liquid is when the temperature is 30° ; 32° ; 34° ; 36° ; 38° ; 40° ; 42° .

9. Tell what the temperature is when the liquid rises to each line on the thermometer between 50 and 60.

10. Water freezes at a temperature of 32° . Find 32° on the thermometer.

11. Mary saw ice on the sidewalk when she came to school one morning. The temperature was 27° . When she went home for lunch, the thermometer read 38° . The ice was gone. There was a puddle of water in its place. Why?

12. On the thermometer find 50° ; 52° ; 53° ; 54° ; 55° .

13. How much does the temperature rise or fall when it goes from 54° to 66° ? 78° to 70° ? 46° to 68° ? 54° to 50° ?

14. Tell some ways in which thermometers are used.

Carl's money

Every week Carl earns 20¢ from a neighbor for feeding her chickens. One day Carl said, "I don't earn enough to pay for all the things I need, Daddy. I wish you would give me an allowance."

"I will, Carl, if you can prove that you know a few things about money."

Carl's father asked him the questions below. Can you answer them? Carl could.

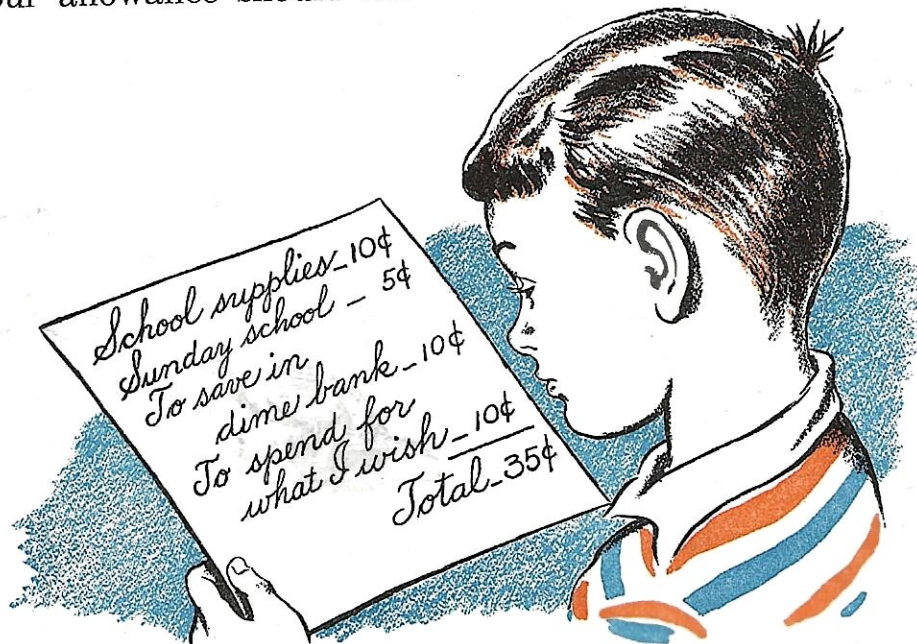
1. A dime is worth ? pennies; or ? nickels.
2. A quarter is worth ? pennies; or ? nickels; or ? dimes and 1 nickel.

LEARN THIS

A fifty-cent piece is called a *half dollar*.
One hundred cents is a *dollar*.

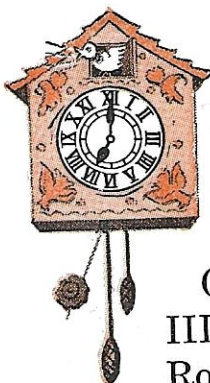
3. A half dollar is worth ? pennies; or ? nickels; or ? dimes; or ? quarters.
4. A dollar is worth ? pennies; or ? nickels; or ? dimes; or ? quarters; or ? half dollars.
5. Name some things that cost a penny; a nickel; a dime.
6. Do you know some things that cost about a quarter? a half dollar? a dollar?
7. How much change will you get:
 - from a nickel if you spend 3¢? 2¢? 1¢? 4¢? 5¢?
 - from a dime if you spend 5¢? 3¢? 8¢? 6¢? 7¢? 9¢?
 - from a quarter if you spend 20¢? 15¢? 10¢? 5¢? 1¢?
 - from a half dollar if you spend 42¢? 37¢? 23¢? 16¢?
 - from a dollar if you spend 85¢? 75¢? 40¢? 35¢? 15¢?

Carl's father said, "Good work, son. You know money well enough to have an allowance. Make a list of the things you need money for each week. Then we can find out what your allowance should be."



8. Read Carl's list. How much does he need each week?
9. His father said, "Your list shows you need 35¢ a week. You earn only 20¢. I will give you the other ? ¢ each week."
10. Carl saves ? ¢ each week in his dime bank. How long will it take him to save 40¢?
11. Carl wants a 20-cent book called *Model Airplanes*. If he uses his spending money, can he buy the book at the end of 1 week? at the end of 2 weeks?
12. Do you have an allowance? Do you earn money? How do you earn it? How do you spend your money? Do you save money each week? What do you plan to do with what you save?

Roman numbers



What time is it by each of these clocks? Can you read the numbers on the cuckoo clock? Those numbers are called *Roman numbers*.



On clock faces the Roman number *four* is written IIII. But the more common way of writing *four* in Roman numbers is IV.

1	2	3	4	5	6	7	8	9	10	11	12
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII

1. What does the Roman number I mean? the Roman number V? X? VI? VII? XI? XII? IX? IV?
2. Write the Roman numbers from I to XII. Where have you seen Roman numbers besides on a clock?
3. Billy kept a record of all the Roman numbers he saw. Here is a part of his record. Maybe you would like to keep one in your Arithmetic Folder.

Roman numbers that I have seen

1. V on an old nickel
2. I, II, III, IV, V, VI, VII, VIII, IX -
Chapter numbers in our science book

Now is the time to test yourself



Copy the numbers correctly.
Work carefully. Check your answers.

1. Add and check:
$$\begin{array}{r} 69 \\ + 20 \\ \hline \end{array}$$

2. Subtract and check:
$$\begin{array}{r} 87 \\ - 53 \\ \hline \end{array}$$

3. Find the sum of 3, 4, and 2.

4. What time is it by this clock?



5. This picture shows an addition. Write the same addition in figures.

Cost of paper = 10¢

and



Cost of paints = 10¢ 10¢

and



Cost of both = 10¢ 10¢ 10¢

and



6. Miss Bell's class gathered 24 maple leaves and 35 oak leaves. In all, they gathered ? leaves.

7. Which one of the 3 subtractions below is shown by the picture? Copy the subtraction.



$$\begin{array}{r} 53¢ \\ - 21¢ \\ \hline 32¢ \end{array}$$

$$\begin{array}{r} 5 \text{ dimes } 3 \text{ cents} \\ - 1 \text{ dime } 2 \text{ cents} \\ \hline 4 \text{ dimes } 1 \text{ cent} \end{array}$$

$$\begin{array}{r} 35¢ \\ - 12¢ \\ \hline 23¢ \end{array}$$

8. Jerry has a quarter. He wants to buy a flashlight for 49¢. How much more money does he need?

9. Alice spent 30¢ in the toyshop. She gave the clerk a half dollar. How much change should she receive?

10. The temperature was 55° at 9 o'clock. It was 65° at noon. How much warmer was it at noon?

Number names

1. Write the numbers from 1 to 5 in a column. Then find the correct number word below to write beside each number.

three two five one four

2. Write the numbers from 6 to 10 in a column. Then find the correct number word below to write beside each number.

seven six nine eight ten

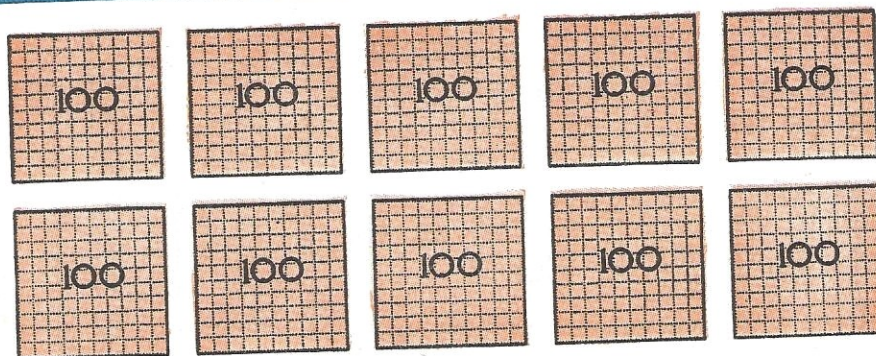
Write in figures the numbers in columns *a*, *b*, and *c*.

<i>a</i>	<i>b</i>	<i>c</i>
3. ten	zero	twenty-six
4. eleven	ten	sixty-two
5. twelve	twenty	forty-seven
6. thirteen	thirty	seventy-four
7. fourteen	forty	thirty-five
8. fifteen	fifty	fifty-three
9. sixteen	sixty	ninety-one
10. seventeen	seventy	nineteen
11. eighteen	eighty	eighty-four
12. nineteen	ninety	forty-eight
13. twenty	one hundred	sixty-seven

14. Write these words in a column in the right order:

first	sixth	ninth	fifth	seventh
eighth	second	tenth	fourth	third

Three-place numbers



Some children are selling Christmas seals. There are 100 seals in each sheet. How many sheets are shown here?

In one sheet there are one hundred seals. In two sheets there are two hundred seals. Two hundred is a three-place number. It needs two zeros and is written like this: 200. The zeros mean there are no tens and no ones.

1. Point to the seals and count them by hundreds.

one hundred	100
two hundred	200
three hundred	300
four hundred	400
five hundred	500

six hundred	600
seven hundred	700
eight hundred	800
nine hundred	900
ten hundred	1000

In ten sheets there are ? hundred seals. Ten hundred is called *one thousand*. It is written: 1,000.

2. Dick had one sheet of seals to sell. He divided it into strips of ten. How many rows of ten could he make out of one sheet? $100 = \underline{\quad ? \quad}$ tens.

3. Look at the picture at the top of the page. How many rows of ten are there in 1 sheet? 3 sheets? 6 sheets?

$$300 = \underline{\quad ? \quad} \text{ tens}$$

$$400 = \underline{\quad ? \quad} \text{ tens}$$

$$600 = \underline{\quad ? \quad} \text{ tens}$$

$$500 = \underline{\quad ? \quad} \text{ tens}$$

$$1000 = \underline{\quad ? \quad} \text{ tens}$$

$$900 = \underline{\quad ? \quad} \text{ tens}$$

Three-place numbers

1. In this chart read the numbers from 100 to 1000; from 10 to 100; from 1 to 10.

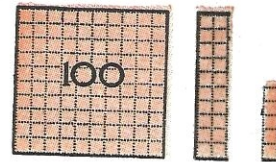
What do the zeros in the first column in the chart mean? in the second column in the chart?

100	10	1
200	20	2
300	30	3
400	40	4
500	50	5
600	60	6
700	70	7
800	80	8
900	90	9
1000	100	10

2. June sold one sheet of 100 seals, 2 rows of 10, and 5 more. She sold one hundred twenty-five seals.

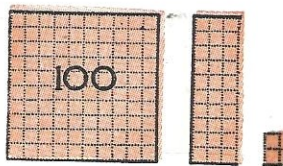
This picture shows how many Christmas seals she sold. →

One hundred twenty-five is written: 125. It is a three-place number. 125 means 1 hundred, 2 tens, and 5 ones.

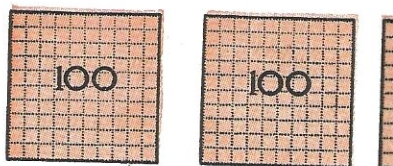


3. How many seals did each of these boys sell?

Dick sold



Tom sold



Jack sold



4. Dick sold 132 seals.

132 means hundred, tens, ones.

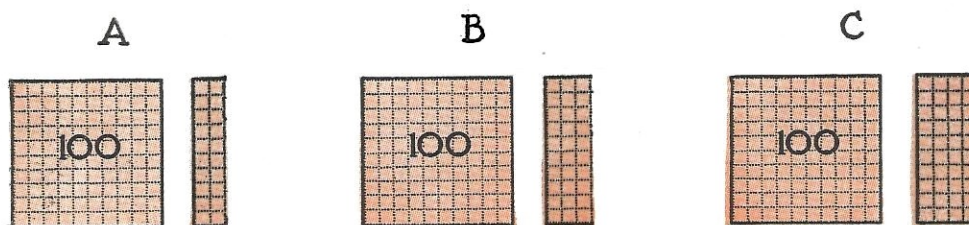
5. Tom sold 210 seals.

210 means hundred, ten, ones.

6. Jack sold 107 seals.

107 means hundred, tens, ones.

7. How many sheets of 100 seals, how many rows of 10 seals, how many separate seals are 375 seals? 205? 320?



1. How many seals are there in Picture A? in B? in C?
2. In which picture can you see 13 tens? 14 tens? 12 tens?
3. $120 = \underline{\quad ? \quad}$ tens $130 = \underline{\quad ? \quad}$ tens $140 = \underline{\quad ? \quad}$ tens
4. $150 = \underline{\quad ? \quad}$ tens $160 = \underline{\quad ? \quad}$ tens $200 = \underline{\quad ? \quad}$ tens
5. 1 hundred and 1 ten = $\underline{\quad ? \quad}$ tens. $110 = \underline{\quad ? \quad}$ tens
 1 hundred and 8 tens = $\underline{\quad ? \quad}$ tens. $180 = \underline{\quad ? \quad}$ tens
 1 hundred and 7 tens = $\underline{\quad ? \quad}$ tens. $170 = \underline{\quad ? \quad}$ tens
 1 hundred and 10 tens = $\underline{\quad ? \quad}$ tens. $200 = \underline{\quad ? \quad}$ tens
6. $10 \text{ tens} = \underline{\quad ? \quad}$ hundred.
 $11 \text{ tens} = \underline{\quad ? \quad}$ hundred and $\underline{\quad ? \quad}$ ten.
 $14 \text{ tens} = \underline{\quad ? \quad}$ hundred and $\underline{\quad ? \quad}$ tens.
 $19 \text{ tens} = \underline{\quad ? \quad}$ hundred and $\underline{\quad ? \quad}$ tens.
7. Count by 25's to 400; by 30's to 150; by 40's to 200.
8. Count by 50's to 1000; by 20's to 500.
9. Count by 1's from 89 to 103; from 189 to 203.
10. Count by 2's from 146 to 156; from 294 to 304.
11. Count by 5's from 75 to 115; from 390 to 425.
12. Count by 10's from 150 to 230; from 640 to 710.
13. Count by 10's from 25 to 125; from 112 to 212.
14. What is the largest 2-place number? the smallest?
15. What is the largest 3-place number? the smallest?
16. What number comes next after: 909? 990? 999?
17. What number comes just before: 900? 910? 901?

Reading and writing three-place numbers

1. Miss Kane's class sold 785 seals. How many sheets of 100 seals, how many rows of 10 seals, and how many extra seals did they sell?

785 is hundreds, tens, and ones

2. When you put together 400, 60, and 3, you have four hundred sixty- .

3. When you put together 600, 50, and 4, you have hundreds, tens, and ones.

4. When you put together 300 and 1, you have 3 hundreds, 0 tens, and 1 one, or 301. The zero in 301 shows there are tens in the tens place.

5. What does the zero show in these numbers?

101 105 110 107 104 120

6. Read each of these numbers. Then tell how many hundreds, tens, and ones there are in each.

169	504	401	841	119	906
254	669	860	732	508	700

7. Write the numbers above as your teacher reads them.

8. Write the number that means:

3 hundreds, 7 tens, 4 ones	2 hundreds, 9 tens, 7 ones
6 hundreds, 3 tens, 0 ones	7 hundreds, 0 tens, 6 ones
8 hundreds, 0 tens, 0 ones	5 hundreds, 5 tens, 5 ones

9. Write these numbers in figures:

five hundred forty-five	two hundred fifty
nine hundred sixty-one	four hundred ninety-three

10. Write the numbers from 98 to 110; from 293 to 302.

11. Write the numbers by 100's from 100 to 1000.

Reading money numbers

Johnny likes these slacks.
How much do they cost?

\$9.50 means 9 dollars, 5 dimes, and no cents.

\$9.50 is read "9 dollars and 50 cents."

The sign for dollars is \$.
The dot in \$9.50 is the *cents point*. The figure to the left of the cents point tells the number of dollars. The two figures to the right of the cents point tell the number of cents.



1. \$8.75 means dollars, dimes, cents.
\$8.75 is read dollars and cents.
2. \$14.50 means dollars, dimes, cents.
\$14.50 is read dollars and cents.
3. \$12.00 means dollars, dimes, cents.
\$12.00 is read dollars.

1 cent is written 1¢ or \$.01
1 dollar is written \$1 or \$1.00

4. Tell how many dollars, dimes, and cents there are in:
\$2.25 \$6.43 \$3.05 \$6.00 \$11.50
5. Which is more: \$87.00 or \$.87? \$7.06 or \$7.60?

Read these prices. Which is largest? smallest?

6. 3¢ \$.82 \$.03 \$.70 \$4.00 \$15.05
7. 8¢ \$.28 \$.08 \$.35 \$3.75 \$12.02

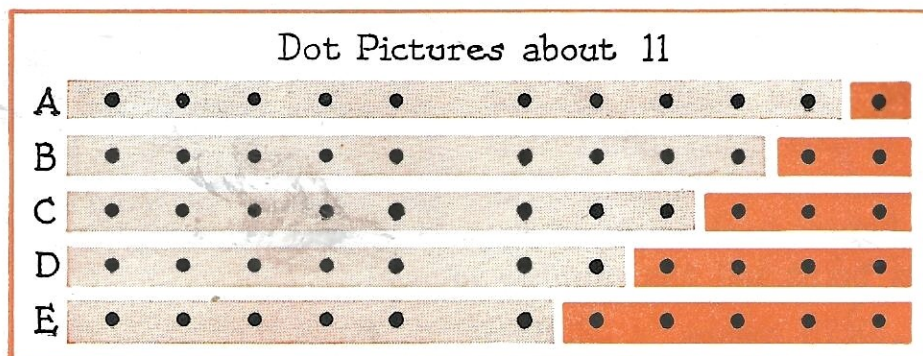
Facts about 11

Miss Lee's class made 11 paper turkeys. They want to paste the turkeys on the 2 big doors of their classroom.

Jane said, "Let's put the same number on each door."

Jim said, "We can't do that." Prove that Jim is right.

How many turkeys can they put at the front door if they put 2 at the back door? if they put 3? 4? 5?



1. Row A shows that 10 and 1 are ?. How many dots are there in each row of the chart? Show how Row B teaches you these four facts:

$$\begin{array}{r} 9 \\ + 2 \\ \hline 11 \end{array} \quad \begin{array}{r} 2 \\ + 9 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 11 \\ - 9 \\ \hline 2 \end{array} \quad \begin{array}{r} 11 \\ - 2 \\ \hline 9 \end{array}$$

2. What 2 addition facts does Row C teach? Row D? E? What 2 subtraction facts does each row teach?

3. Write the facts you taught yourself in Ex. 2.

4. Make up a problem about each fact you wrote in Ex. 3.

5. $9 + 1 = 10$, so $9 + 2 = \underline{\quad}$.

8. $6 + 5 = 11$, so $11 - 6 = \underline{\quad}$.

6. $7 + 3 = 10$, so $7 + 4 = \underline{\quad}$.

9. $7 + 4 = 11$, so $11 - 7 = \underline{\quad}$.

7. $8 + 2 = 10$, so $8 + 3 = \underline{\quad}$.

10. $8 + 3 = 11$, so $11 - 3 = \underline{\quad}$.

Using coins to teach yourself about 11

1. Use 2 nickels and a penny to show these 4 facts:

$$5 + 6 = 11 \quad 6 + 5 = 11 \quad 11 - 6 = 5 \quad 11 - 5 = 6$$

2. Use 11 toy pennies to show that:

2 fives and 1 more are 11 3 threes and 2 more are 11
2 fours and 3 more are 11 5 twos and 1 more are 11

3. Jane says, "When I add 9¢ and 2¢, I change the 9 pennies and 2 pennies into 1 dime and 1 penny. That makes it easy to see that $9¢ + 2¢ = 10¢ + 1¢ = \underline{\quad}¢$."

Use toy coins to prove your answers in Exs. 4 to 6.

4. $8¢ + 3¢ = \underline{1} \text{ dime and } \underline{\quad} \text{ cent.}$ $8¢ + 3¢ = \underline{\quad}¢.$

5. $7¢ + 4¢ = \underline{\quad} \text{ dime and } \underline{\quad} \text{ cent.}$ $7¢ + 4¢ = \underline{\quad}¢.$

6. $6¢ + 5¢ = \underline{\quad} \text{ dime and } \underline{\quad} \text{ cent.}$ $6¢ + 5¢ = \underline{\quad}¢.$

7. Bill had a dime and a cent. He gave the cent to Polly. What did he have to do to the dime to give a cent to Larry? Then Bill had $\underline{\quad}¢$ left. Does $11¢ - 2¢ = 10¢ - 1¢$?

8. To take 3¢ from 1 dime and 1 cent, you take $\underline{\quad}$ cents out of the dime. Does $11¢ - 3¢ = 10¢ - 2¢$?

9. To take 4¢ from 1 dime and 1 cent, you take $\underline{\quad}$ cents out of the dime. Does $11¢ - 4¢ = 10¢ - 3¢$?

9	2	8	3	7	4	6	5
+ 2	+ 9	+ 3	+ 8	+ 4	+ 7	+ 5	+ 6
11	11	11	11	11	11	11	11
11	11	11	11	11	11	11	11
- 9	- 2	- 3	- 8	- 7	- 4	- 6	- 5
2	9	8	3	4	7	5	6

Using facts about 11

Write in 2 ways each number fact you use in Exs. 1 to 7.

1. Ann has 7 pictures of white horses and 4 pictures of black horses. In all, she has ? horse pictures.

2. Jack is 8 years old. Molly is 11 years old. So Jack is ? years younger than Molly.

3. Bill had 11 arithmetic problems to do. He has done 3. How many more does he have to do?

4. Eddie had 11¢. He spent a nickel. He has ?¢ left.

5. Ted has 3 red marbles and 8 blue ones. He has ? marbles in all.

6. Ann had 6¢. Then she earned a nickel. Has she enough now to buy a 10-cent game? more than enough?

7. Joe wants to buy a 9-cent top and a 2-cent string for the top. To buy both, he needs ?¢.

8. Tom and Bill found 11 marbles. If Tom keeps 2 marbles, Bill gets ?. If Tom keeps 3, Bill gets ?. Tell 6 other ways the boys could share the marbles. Don't give either boy more than 9. Can they share them equally?

Practice until you can say all the answers correctly:

9. 9 5 6 11 8 11 11 7 11
 + 2 + 6 + 4 - 4 + 3 - 9 - 3 + 4 - 5

10. 11 3 11 4 11 2 7 11 6
 - 2 + 8 - 6 + 7 - 8 + 9 + 3 - 7 + 5

11. Copy Exs. 9 and 10 and write the answers. Make Help-Yourself Cards for any facts you do not know. Study them; then write the answers again.

Be your own teacher

You can be your own teacher in arithmetic. You have never learned how to do the problems on this page, but you can do them. You may draw pictures to find the answers, if you want to.

See how many different ways the boys and girls in your class can find to do these problems.

1. How much money will Jack need to buy 3 games costing 15¢ each?

2. Billy wants a baseball suit costing \$4.25 and a cap costing \$.50. How much money will he need for both?

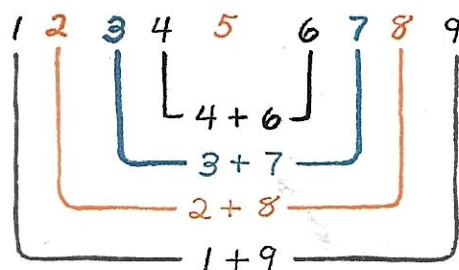
3. Four girls bought a box of lemon candies. There were 20 pieces in the box. If they share the candy equally, how many pieces should each girl take?

4. Tom's grandmother gave him \$2.00 for his birthday. If he spends 35¢ to go to the movies, how much money will he have left?

5. Ann is making a costume. She measured with her foot ruler and found she needs 6 feet of cloth. But the cloth is sold by the yard. How many yards of cloth should she buy?

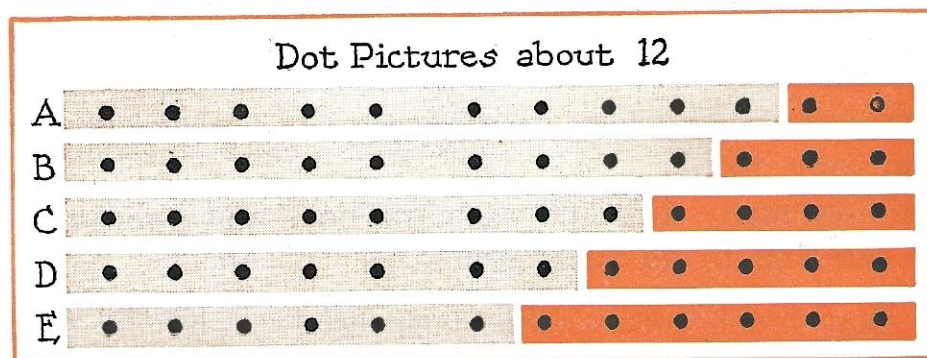
6. Jim's teacher asked him to find the sum of the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9. Jim thought a minute and then said, "45."

His teacher asked how he found the sum so quickly. Jim showed her this picture and said, "This is what I thought." Can you understand Jim's picture?



To the Teacher: See Note 6 on page 311.

Facts about 12



This chart will help you learn about the number 12.

1. Row A shows that 10 and 2 are ?. How many dots are there in each row?

2. What 2 addition facts does Row B teach? Row C? Row D? What subtraction facts do these rows teach?

3. What 2 facts does Row E teach you?

4. Write the facts you taught yourself in Exs. 2 and 3. Make up a problem about each fact.

5. $9 + 1 = 10$, so $9 + 3 = ?$. 7. $7 + 3 = 10$, so $7 + 5 = ?$.

6. $8 + 2 = 10$, so $8 + 4 = ?$. 8. $6 + 4 = 10$, so $6 + 6 = ?$.

9. Use 2 nickels and 2 pennies to show these 4 facts:

$$5 + 7 = 12 \quad 7 + 5 = 12 \quad 12 - 5 = 7 \quad 12 - 7 = 5$$

10. $8 + 4 = 12$, so $4 + 8 = ?$. 13. $9 + 3 = 12$, so $12 - 9 = ?$.

11. $7 + 5 = 12$, so $5 + 7 = ?$. 14. $12 - 4 = 8$, so $12 - 8 = ?$.

12. $6 + 6 = 12$, so $12 - 6 = ?$. 15. $12 - 5 = 7$, so $12 - 7 = ?$.

16. Use toy pennies or draw dot pictures to show that:

3 fours are 12

4 threes are 12

2 sixes are 12

2 fives and 2 more are 12

1. Count these eggs by 4's. This shows that $4 + 4 = \underline{\quad ? \quad}$, and $8 + 4 = \underline{\quad ? \quad}$.

2. Cover a row of 4 eggs. $12 - 4 = \underline{\quad ? \quad}$.

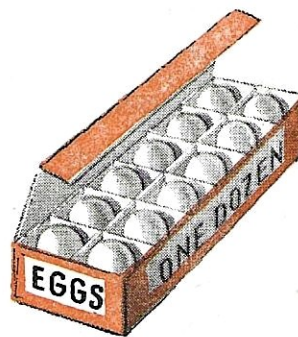
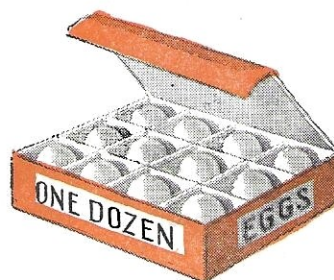
3. Count backward by 4's from 12. This shows that $12 - 4 = \underline{\quad ? \quad}$, and $8 - 4 = \underline{\quad ? \quad}$.

4. Count the eggs by 3's. This shows that $3 + 3 = \underline{\quad ? \quad}$, $6 + 3 = \underline{\quad ? \quad}$, and $9 + 3 = \underline{\quad ? \quad}$.

5. Cover a row of 3 eggs. $12 - 3 = \underline{\quad ? \quad}$.

6. Count backward by 3's from 12. This shows that $12 - 3 = \underline{\quad ? \quad}$; $9 - 3 = \underline{\quad ? \quad}$; $6 - 3 = \underline{\quad ? \quad}$.

7. Count these eggs by 6's. $6 + 6 = \underline{\quad ? \quad}$. →



**LEARN
THIS**

There are 12 things in a dozen.

8. Cover 6 eggs. Now how many eggs can you see?
 $12 - 6 = \underline{\quad ? \quad}$. How many eggs are there in half a dozen?

9. Your foot ruler is $\underline{\quad ? \quad}$ inches long. How many inches can you see if you cover 3 in.? 4 in.? 5 in.? 6 in.?

10. $9\text{¢} + 3\text{¢} = 1 \text{ dime and } \underline{\quad ? \quad} \text{ cents. } 9\text{¢} + 3\text{¢} = \underline{\quad ? \quad} \text{¢.}$

11. To take 3¢ from 12¢ (1 dime and 2 cents), you take 1¢ out of the dime. You have $\underline{\quad ? \quad} \text{¢}$ left. $12\text{¢} - 3\text{¢} = \underline{\quad ? \quad} \text{¢.}$

9	3	8	4	7	5	6
+ 3	+ 9	+ 4	+ 8	+ 5	+ 7	+ 6
12	12	12	12	12	12	12
12	12	12	12	12	12	12
- 9	- 3	- 8	- 4	- 7	- 5	- 6
3	9	4	8	5	7	6

Using facts about 12

Write in 2 ways each number fact you use in Exs. 1 to 6.

1. Tom has 6 red pencils and 6 green pencils. All together he has ? pencils.

2. Diana has a dozen eggs. She is using 4 eggs in a cake. How many eggs will she have left?

3. Nick wants to buy a 12-cent ticket. He has only 7¢. He needs ?¢ more.

4. Bill caught a fish a foot long. Sally caught one 8 inches long. Bill's fish was ? inches longer than Sally's.

5. Peter had 7¢. He was given a nickel. How much did he have then?

6. Jo has 12¢. Jane has 3¢. Jane has ?¢ less than Jo.

7. Mary is buying a dozen cupcakes. How many yellow cakes can she have if she gets 9 white ones? 8? 7? 6? 5? 4? 3? Can she get an equal number of each?

8. Write 4 facts for each of these groups of numbers:

7, 4, 11 5, 6, 11 7, 5, 12 8, 3, 11

Practice until you can say every answer correctly:

9.
$$\begin{array}{r} 12 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ + 5 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ + 5 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 9 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 6 \\ + 6 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ + 8 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ + 9 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 4 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ + 7 \\ \hline \end{array}$$

11. Write the answers to Exs. 9 and 10 on folded paper. Make and study Help-Yourself Cards for any facts you did not know. Then write the answers again.

No pencils, please

1. Tell the missing numbers:

A dime = ?¢

1 yard = ? feet

A nickel = ?¢

1 quart = ? pints

A dollar = ?¢

1 week = ? days

A quarter = ?¢

1 foot = ? inches

A half dollar = ?¢

1 year = ? months

2. IX = ? XII = ? IV = ? XI = ?

3. Add and check:

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>j</i>
3	4	7	4	2	5	2	5	5	4
2	0	2	3	4	4	4	0	2	4
<u>1</u>	<u>5</u>	<u>1</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>6</u>	<u>7</u>	<u>4</u>	<u>4</u>

4. Tell the answers to the examples on pages 22 and 37.

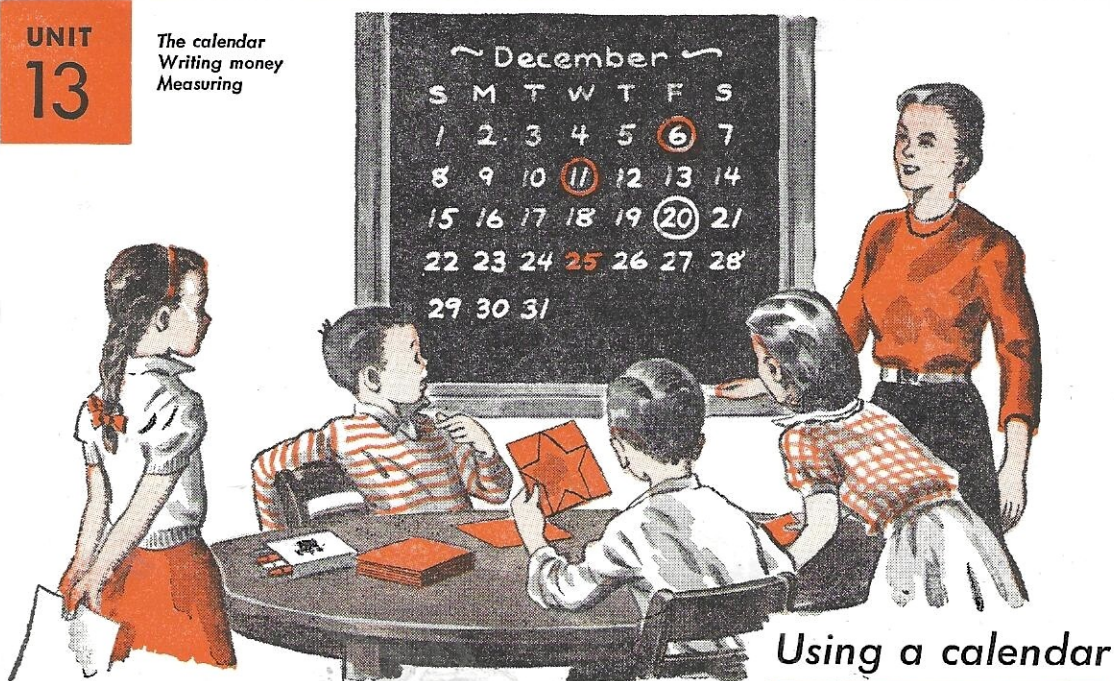
- | | | |
|---------------------------------|------------------------------|------------------------------|
| 5. $9 + \underline{\quad} = 12$ | $6 + \underline{\quad} = 10$ | $4 + \underline{\quad} = 12$ |
| $8 + \underline{\quad} = 11$ | $7 + \underline{\quad} = 11$ | $8 + \underline{\quad} = 10$ |
| $5 + \underline{\quad} = 12$ | $6 + \underline{\quad} = 12$ | $9 + \underline{\quad} = 11$ |
| $6 + \underline{\quad} = 11$ | $7 + \underline{\quad} = 10$ | $7 + \underline{\quad} = 12$ |

6. Sue says she can't tell these missing numbers. Why not?

$24 - 56 = \underline{\quad}$ 1 qt. = ? yd. $8 + \underline{\quad} = \underline{\quad}$

Tell each answer. Then see if each answer is right by *seeing in your mind* a number ladder.

- | | | | | | | | |
|----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 7. | 98 | 87 | 69 | 86 | 75 | 87 | 79 |
| | <u>- 42</u> | <u>- 34</u> | <u>- 37</u> | <u>- 42</u> | <u>- 30</u> | <u>- 57</u> | <u>- 53</u> |
| 8. | 43 | 15 | 30 | 62 | 36 | 27 | 82 |
| | <u>+ 35</u> | <u>+ 74</u> | <u>+ 57</u> | <u>+ 36</u> | <u>+ 40</u> | <u>+ 50</u> | <u>+ 13</u> |



Using a calendar

1. Why is the 25 red on the calendar in the picture?
2. A white circle is drawn around the day school closes for Christmas vacation. On what day of the month does school close? On what day of the week?
3. Friday, December 6, is Jean's birthday. Find the date on the calendar.
4. Paul's birthday is marked with a red circle, too. Can you find it? On what day of the month does his birthday come? On what day of the week?
5. Paul says his birthday is two weeks before Christmas. Do you agree with him?
6. Ted borrowed a book from the library on December 9. He may keep it two weeks. Look at the calendar in the picture and tell when he must take it back.
7. Don said their calendar showed three weeks of school in December. Do you agree with him?

8. Mary says there are five school days in a week. Name them. Is Mary right?

9. How many school days are there in three weeks?
 $5 + 5 + 5 = ?$. How many days will the children in Miss Carter's class go to school in December?

You will need to look at your classroom calendar to answer the next questions.

10. What month is it now? What year? What day of the week?

11. On what day of the week is the first of December this year? On what day of the week is Christmas?

12. School closes for Christmas vacation this year on what day of the month? on what day of the week?

13. Which children in your class have birthdays in December? On what days of the month do they come? On what days of the week do they come this year?

14. Name the days of the week. Count them. What day of the month is a week before Christmas? What day of the week is that?



There are 7 days in a week.

15. What day of the month is two weeks before Christmas? What day of the week is it?

16. What day of the month is the last day of December? What day of the week is it?

17. On what day of the week does December tenth come this year? December fifth? December twentieth?

18. Tell some ways you use a calendar at school; at home.



Making lollipops

Here are the things Miss Kane's class used to make lollipops:

3 cups of sugar

A few drops of flavoring

1 cup of Karo syrup

A few drops of coloring

2 cups of water

First, the girls put the sugar, the syrup, and the water together and boiled them until a little dropped in cold water became brittle.

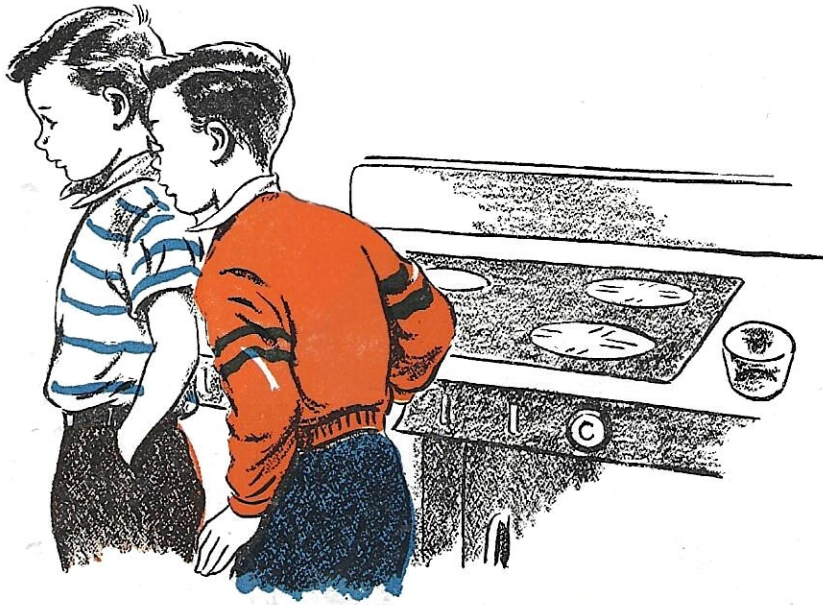
Then they divided the candy into three equal parts. Betsy poured $\frac{1}{3}$ of the candy into one pitcher, $\frac{1}{3}$ into a second pitcher, and $\frac{1}{3}$ into a third pitcher.

Jean added blue coloring to $\frac{1}{3}$ of the candy.

She added brown coloring to $\frac{1}{3}$ of the candy.

She added orange coloring to $\frac{1}{3}$ of the candy.

The children oiled the shiny white top of the kitchen table. They poured big drops of the candy on the table and stuck lollipop sticks into the drops.



1. Into how many equal parts did Betsy divide the candy? What part of the candy did Jean color blue? Write your answer in figures.
2. The girls made 11 blue lollipops and 13 brown lollipops. How many was that?
3. The boys made 15 orange lollipops. How many lollipops did the class make all together?
4. The lollipop sticks came in packages. The children had 2 packages. There were a dozen sticks in each package. How many sticks did they have?
5. They had enough candy for 39 lollipops. They had only 24 sticks. How many more sticks did they need?
6. Jane found 10 sticks in the closet. Then they had 24 sticks and 10 sticks. How many sticks was that?
7. They had candy enough for 39 lollipops. They had 34 sticks. How many lollipops had to go without sticks?
8. Have you ever made candy? If so, what measuring did you do? How long did you cook the candy?



Reading and writing dollars and cents

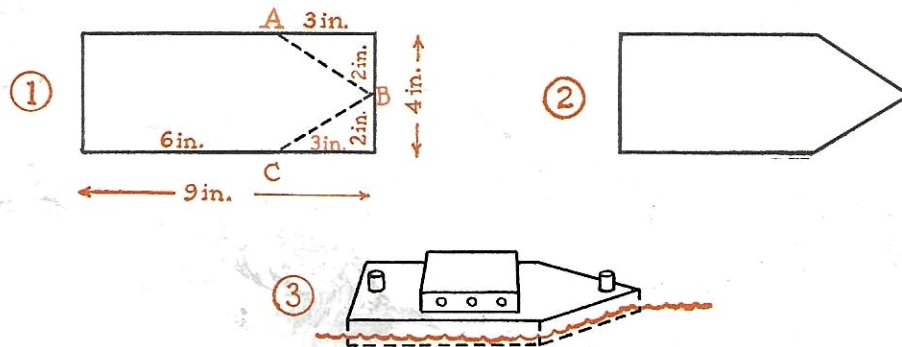
Look at the picture. Do you see anything you want for Christmas?

1. How much do the skates cost? Copy the price.
2. What is the price of the doll? the airplane?
3. Read the price tag on the sled. Copy the price.
4. Read the price of the football. Copy the price.
5. Make a list of toys that you think a boy would like. Where can you find the prices of these toys? Write the prices.
6. Make a list of toys that you think a girl would like. Write the prices of the toys.

Making a boat

Dave made a boat. This is the way he made it.

He took a piece of wood 4 inches wide and about 1 inch thick. He sawed off a piece 9 inches long. This was for the main part of the boat.



1. Look at the first picture. Tell how Dave measured to mark Point A; Point C; Point B.

He drew a line from A to B and from C to B.

Then he sawed off the corners along the lines. His piece of wood then looked like the second picture.

Next, Dave cut out a square piece of wood 3 inches long and 3 inches wide. This was for the cabin. He nailed the cabin to the boat.

2. His mother gave him two small spools for posts. Where did he put those? Look at the third picture.

He sandpapered the boat. Then he painted it. He used tacks for windows for the cabin.

3. Can you make a boat like Dave's? Make a paper pattern first. That will help you to measure correctly.

4. Have you ever needed to measure when you made something out of wood? out of paper? out of cloth? If possible, show the class what you made.



Put on your thinking cap

► Oral review

1. $8¢ + 3¢ = 10¢ + \underline{\quad}¢ = \underline{\quad}¢$

2. $9¢ + 2¢ = 10¢ + \underline{\quad}¢ = \underline{\quad}¢$

3. $7¢ + 4¢ = 10¢ + \underline{\quad}¢ = \underline{\quad}¢$

4. $\begin{array}{r} 6 \\ + 4 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ - 6 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ + 3 \\ \hline \end{array}$ $\begin{array}{r} 11 \\ - 8 \\ \hline \end{array}$

5. $\begin{array}{r} 3 \\ + 9 \\ \hline \end{array}$ $\begin{array}{r} 12 \\ - 9 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ + 5 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ - 4 \\ \hline \end{array}$

6. $12 - 6 = 6$, so $6 + 6 = \underline{\quad}$.

7. $7 + 3 = 10$, so $3 + 7 = \underline{\quad}$.

8. $9 + 1 = 10$, so $9 + 2 = \underline{\quad}$.

9. Sue has 9 pansy plants. She wants to put each in a pot. She has only 5 pots. She must buy $\underline{\quad}$ more pots.

10. Harry had a dime. He spent 6¢. He has $\underline{\quad}¢$ left.

11. Sue has 3 white kittens and 3 black kittens. All together she has $\underline{\quad}$ kittens.

12. Jean is 9 years old. Molly is 7. Molly is $\underline{\quad}$ years younger than Jean.

► Written review

Add and check.

1. $\begin{array}{r} 2 \\ 3 \\ 4 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ 2 \\ 1 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ 0 \\ 4 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ 1 \\ 3 \\ \hline \end{array}$ $\begin{array}{r} 1 \\ 2 \\ 6 \\ \hline \end{array}$

2. $\begin{array}{r} 2 \\ 0 \\ 3 \\ 4 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ 0 \\ 2 \\ 5 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ 2 \\ 0 \\ 4 \\ \hline \end{array}$ $\begin{array}{r} 1 \\ 4 \\ 2 \\ 4 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ 0 \\ 1 \\ 4 \\ \hline \end{array}$

3. $\begin{array}{r} 35 \\ 20 \\ \hline \end{array}$ $\begin{array}{r} 46 \\ 33 \\ \hline \end{array}$ $\begin{array}{r} 55 \\ 24 \\ \hline \end{array}$ $\begin{array}{r} 67 \\ 22 \\ \hline \end{array}$

Subtract and check.

4. $\begin{array}{r} 98 \\ 68 \\ \hline \end{array}$ $\begin{array}{r} 76 \\ 54 \\ \hline \end{array}$ $\begin{array}{r} 54 \\ 32 \\ \hline \end{array}$ $\begin{array}{r} 32 \\ 20 \\ \hline \end{array}$

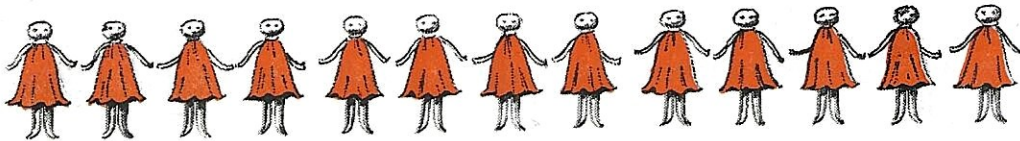
5. $\begin{array}{r} 58 \\ 54 \\ \hline \end{array}$ $\begin{array}{r} 67 \\ 63 \\ \hline \end{array}$ $\begin{array}{r} 85 \\ 44 \\ \hline \end{array}$ $\begin{array}{r} 96 \\ 71 \\ \hline \end{array}$

6. What number means:
6 tens and 4? 5 tens and 5?
8 tens and 7? 4 tens and 9?

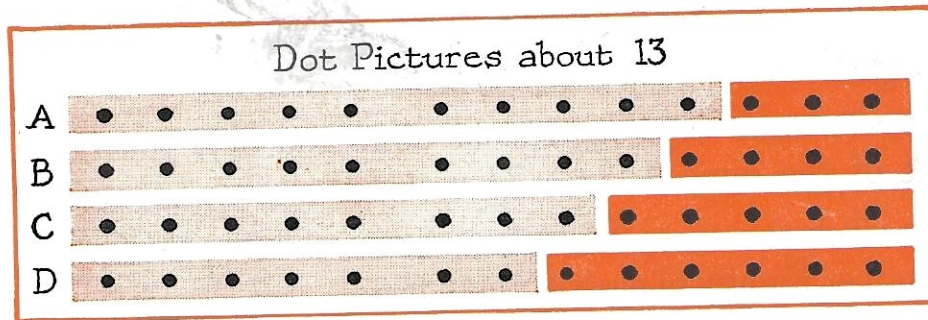
7. Do Exs. 9, 10, and 11 on pages 76 and 80.

Facts about 13

1. Ann and Polly together want to make 13 clothespin dolls. How many must Polly make if Ann makes 5? To find out, cover 5 of the 13 dolls.



2. How many must Polly make if Ann makes 7? 6? 9? 8?



3. Row A shows that 10 and 3 are ?. How many dots are there in each row?

4. What 2 addition and subtraction facts does Row B teach? Row C? Row D?

5. $6 + 6 = 12$, so $6 + 7 = \underline{\quad ? \quad}$. 7. $9 + 3 = 12$, so $9 + 4 = \underline{\quad ? \quad}$.

6. $7 + 3 = 10$, so $7 + 6 = \underline{\quad ? \quad}$. 8. $8 + 5 = 13$, so $13 - 8 = \underline{\quad ? \quad}$.

9. Use 2 nickels and 3 pennies to show that:

$5 + 8 = \underline{\quad ? \quad}$ $8 + 5 = \underline{\quad ? \quad}$ $13 - 5 = \underline{\quad ? \quad}$ $13 - 8 = \underline{\quad ? \quad}$

10. Draw dot pictures to show that:

3 fours and 1 are 13

2 sixes and 1 are 13

4 threes and 1 are 13

2 fives and 3 are 13

Facts about 13

Use toy coins (dimes and pennies) to show that:

1. $9¢ + 4¢ = 1 \text{ dime and } \underline{\quad}¢$ $9¢ + 4¢ = \underline{\quad}¢$
2. $8¢ + 5¢ = 1 \text{ dime and } \underline{\quad}¢$ $8¢ + 5¢ = \underline{\quad}¢$
3. $7¢ + 6¢ = 1 \text{ dime and } \underline{\quad}¢$ $7¢ + 6¢ = \underline{\quad}¢$
4. To take $5¢$ from $13¢$ (1 dime and $3¢$), you take $\underline{\quad}¢$ out of the dime. $13¢ - 5¢ = \underline{\quad}¢$.
5. To take $9¢$ from $13¢$ (1 dime and $3¢$), you take $\underline{\quad}¢$ out of the dime. $13¢ - 9¢ = \underline{\quad}¢$.
6. To take $7¢$ from $13¢$ (1 dime and $3¢$), you take $\underline{\quad}¢$ out of the dime. $13¢ - 7¢ = \underline{\quad}¢$.
7. To take $8¢$ from $13¢$ (1 dime and $3¢$), you take $\underline{\quad}¢$ out of the dime. $13¢ - 8¢ = \underline{\quad}¢$.
8. Tell the other 3 members in the Number Family of each of these facts: $\begin{array}{r} 6 \\ + 7 \\ \hline \end{array}$ $\begin{array}{r} 13 \\ - 8 \\ \hline \end{array}$ $\begin{array}{r} 13 \\ - 4 \\ \hline \end{array}$
9. $8 + \underline{\quad} = 13$ $7 + \underline{\quad} = 13$ $4 + \underline{\quad} = 13$
10. $9 + \underline{\quad} = 13$ $5 + \underline{\quad} = 13$ $6 + \underline{\quad} = 13$
11. Write 4 facts about each of these groups of numbers:
 6, 7, 13 9, 4, 13 8, 5, 13
12. Do the examples on pages 22 and 37 today.

$\begin{array}{r} 9 \\ + 4 \\ \hline 13 \end{array}$	$\begin{array}{r} 4 \\ + 9 \\ \hline 13 \end{array}$	$\begin{array}{r} 8 \\ + 5 \\ \hline 13 \end{array}$	$\begin{array}{r} 5 \\ + 8 \\ \hline 13 \end{array}$	$\begin{array}{r} 7 \\ + 6 \\ \hline 13 \end{array}$	$\begin{array}{r} 6 \\ + 7 \\ \hline 13 \end{array}$
$\begin{array}{r} 13 \\ - 9 \\ \hline 4 \end{array}$	$\begin{array}{r} 13 \\ - 4 \\ \hline 9 \end{array}$	$\begin{array}{r} 13 \\ - 8 \\ \hline 5 \end{array}$	$\begin{array}{r} 13 \\ - 5 \\ \hline 8 \end{array}$	$\begin{array}{r} 13 \\ - 7 \\ \hline 6 \end{array}$	$\begin{array}{r} 13 \\ - 6 \\ \hline 7 \end{array}$

Using facts about 13

Write in 2 ways the number facts you use in Exs. 1 to 6.

1. Harry has a dime and 3 pennies. How much will he have left if he spends 4¢?

2. There are 6 white stripes and 7 red stripes in the flag of the U.S.A. How many stripes are there in all?

3. John went to see Miss Bell. She said, "I'm busy now. Come back in 5 minutes." John looked at the clock. It was 13 minutes of two. At what time should he go back? Use a clock to prove your answer.

4. Don had a nickel and 3 pennies. He earned another nickel. Then he had ? ¢.

5. On December 6 Harry said, "A week from today is my birthday." His birthday must be on December ? . Use a calendar to prove your answer.

6. The temperature was 13°. An hour later it was 9°. The temperature had fallen ? degrees. Use a thermometer to prove your answer.

Practice until you can say every answer correctly:

7. 9 13 8 7 13 7 9 13
 + 4 - 7 + 5 + 4 - 8 + 6 + 3 - 9

8. 13 5 13 8 4 13 6 9
 - 6 + 8 - 5 + 3 + 9 - 4 + 7 + 2

9. Write the answers to Exs. 7 and 8. Make Help-Yourself Cards for facts you do not know. Study the cards. Then write the answers again.

Facts you should know

Practice until you can say every answer in 3 minutes:

- | | | | | | | | | |
|----|--|--|--|--|--|--|--|--|
| 1. | $\begin{array}{r} 5 \\ + 6 \\ \hline \end{array}$ | $\begin{array}{r} 13 \\ - 6 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ + 4 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ - 5 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ + 2 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ + 4 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ + 7 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ + 9 \\ \hline \end{array}$ |
| 2. | $\begin{array}{r} 11 \\ - 7 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ + 4 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ - 4 \\ \hline \end{array}$ | $\begin{array}{r} 13 \\ - 7 \\ \hline \end{array}$ | $\begin{array}{r} 11 \\ - 2 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ + 6 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ - 8 \\ \hline \end{array}$ | $\begin{array}{r} 13 \\ - 9 \\ \hline \end{array}$ |
| 3. | $\begin{array}{r} 7 \\ + 6 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ - 7 \\ \hline \end{array}$ | $\begin{array}{r} 11 \\ - 9 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ + 8 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ - 6 \\ \hline \end{array}$ | $\begin{array}{r} 11 \\ - 3 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ + 8 \\ \hline \end{array}$ | $\begin{array}{r} 11 \\ - 4 \\ \hline \end{array}$ |
| 4. | $\begin{array}{r} 11 \\ - 8 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ + 5 \\ \hline \end{array}$ | $\begin{array}{r} 13 \\ - 4 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ + 7 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ - 9 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ + 9 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ + 8 \\ \hline \end{array}$ | $\begin{array}{r} 13 \\ - 8 \\ \hline \end{array}$ |
| 5. | $\begin{array}{r} 3 \\ + 9 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ - 3 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ + 5 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ + 3 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ + 7 \\ \hline \end{array}$ | $\begin{array}{r} 13 \\ - 5 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ + 3 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ + 5 \\ \hline \end{array}$ |

Mary writes down the addition and subtraction facts she doesn't know. Her paper looks like this. What facts does she need to learn? How does she help herself learn them?

Facts I don't know	Facts I do know that help me
$5 + 6 = ?$	$5 + 5 = 10$, so $5 + 6 = 11$ $6 + 6 = 12$, so $5 + 6 = 11$ $6 + 5 = 11$, so $5 + 6 = 11$
$12 - 7 = ?$	$7 + 5 = 12$, so $12 - 7 = 5$ $12 - 5 = 7$, so $12 - 7 = 5$ $12 - 6 = 6$, so $12 - 7 = 5$

6. Make a study paper like Mary's to help you learn the facts you couldn't remember in Exs. 1 to 5.

7. Write the answers to Exs. 1 to 5 on folded paper. Make Help-Yourself Cards for any facts you do not know. Study your cards. Then write the answers again.

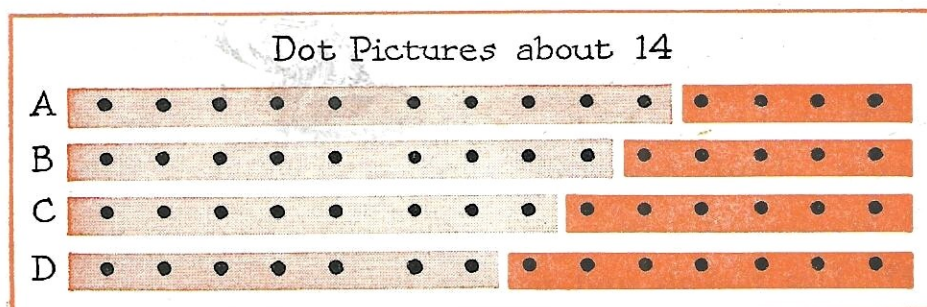
Facts about 14

1. Joan and David found a box with 2 nickels and 4 pennies in it. How much money was in the box all together?

2. They want to share the 14¢. How much will David get if Joan gets 5¢? 6¢? 7¢? 8¢? 9¢? Cover coins in the picture to prove your answers.



3. What would be the fairest way to share 14¢?



4. Row A shows that 10 and 4 are 14. How many dots are there in each row?

5. What addition and subtraction facts do Rows B, C, and D teach? Write the facts. Make a problem for each.

6. $6+7=13$, so $7+7=?$ 8. $8+6=14$, so $14-8=?$.

7. $10+4=14$, so $9+?=14$. 9. $6+6=12$, so $6+8=?$.

$\begin{array}{r} 9 \\ + 5 \\ \hline 14 \end{array}$	$\begin{array}{r} 5 \\ + 9 \\ \hline 14 \end{array}$	$\begin{array}{r} 8 \\ + 6 \\ \hline 14 \end{array}$	$\begin{array}{r} 6 \\ + 8 \\ \hline 14 \end{array}$	$\begin{array}{r} 7 \\ + 7 \\ \hline 14 \end{array}$
$\begin{array}{r} 14 \\ - 9 \\ \hline 5 \end{array}$	$\begin{array}{r} 14 \\ - 5 \\ \hline 9 \end{array}$	$\begin{array}{r} 14 \\ - 8 \\ \hline 6 \end{array}$	$\begin{array}{r} 14 \\ - 6 \\ \hline 8 \end{array}$	$\begin{array}{r} 14 \\ - 7 \\ \hline 7 \end{array}$

Using facts about 14

Write in 2 ways the fact you use to find each answer:

1. Peter has a dime and 4 pennies. If he spends 5¢, how much will he have left?
2. When the temperature rises from 8° to 14°, how many degrees does it rise? Use a thermometer to prove your answer.
3. How many days are there in 2 weeks? Use a calendar to prove your answer.
4. A loaf of bread costs 14¢. Jane has a nickel and 4¢. How much more money does she need?
5. Doris has read 14 pages in her reader. Polly has read 6 pages. Doris has read ? more pages than Polly.
6. How much will a 9-cent kite and a 5-cent ball of string cost? Use nickels and pennies to prove your answer.
7. Mary has a nickel and 3 pennies. Bill has a nickel and 1 penny. Together they have ? nickels and ? pennies. This proves that $8¢ + 6¢ = \underline{\quad}¢$.

Practice until you can say every answer correctly:

- | | | | | | | | | |
|----|--|---|--|---|--|--|--|--|
| 8. | $\begin{array}{r} 9 \\ + 5 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ + 7 \\ \hline \end{array}$ | $\begin{array}{r} 14 \\ - 8 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ + 5 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ + 8 \\ \hline \end{array}$ | $\begin{array}{r} 14 \\ - 5 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ - 5 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ + 7 \\ \hline \end{array}$ |
| 9. | $\begin{array}{r} 13 \\ - 9 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ - 6 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ + 4 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ + 9 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ - 6 \\ \hline \end{array}$ | $\begin{array}{r} 14 \\ - 7 \\ \hline \end{array}$ | $\begin{array}{r} 14 \\ - 6 \\ \hline \end{array}$ | $\begin{array}{r} 14 \\ - 9 \\ \hline \end{array}$ |

10. Write the answers to Exs. 8 and 9. Make Help-Yourself Cards for facts you do not know. Study the cards. Then write the answers again.

Put on your thinking cap



► Oral review

1. Name the other three members in the Number Family of each of these facts:

$$4 + 8 = 12$$

$$11 - 4 = 7$$

$$7 + 6 = 13$$

$$12 - 3 = 9$$

2. Count to 1,000 by 100's; by 50's; by 25's.

3. What time is it? What is the temperature in your room? What is the date today?

4. Jim has 3 fifty-cent pieces and a dime. How much money has he in all?

5. What number is 10 more than 57? than 157? than 257?

6. What number is 10 less than 69? than 109?

7. 1 year = ? months.

1 quarter = ? nickels.

1 quart = ? pints.

8. What numbers do these Roman numerals equal?

X VI III V IX IV VIII

9. How do you check an addition example? a subtraction example?

► Written review

$$\begin{array}{r} 1. \quad 46 \\ + 33 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 35 \\ + 54 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 87 \\ - 62 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 95 \\ - 73 \\ \hline \end{array}$$

$$5. \quad 9¢ + 4¢ = \underline{\quad} ¢$$

$$6. \quad 12¢ - 7¢ = \underline{\quad} ¢$$

7. Write the number that is 10 more than 152.

8. What number is 20 less than 89?

9. Write the number that means 3 hundreds, 7 tens, and 5 ones.

10. Write the largest number you can with the figures 2, 4, 6; the smallest number.

11. Write the number that means 7 tens and 3 ones.

12. $200 + 70 + 6$ is ?.

Using key facts in addition

1. Use dimes and pennies to find:

$$4¢ + 3¢ \quad 14¢ + 3¢ \quad 24¢ + 3¢ \quad 34¢ + 3¢ \quad 44¢ + 3¢$$

2. Use the number chart to find $4 + 3$. Put your finger on 4; count 3 more. You stop at ?. In the same way show how to find $14 + 3$; $24 + 3$; $34 + 3$; $44 + 3$.

If 3 is added to a number ending in 4, the sum ends in ?.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

3. Use the chart to find:

$$\begin{array}{r} 3 \\ + 2 \\ \hline \end{array} \quad \begin{array}{r} 13 \\ + 2 \\ \hline \end{array} \quad \begin{array}{r} 23 \\ + 2 \\ \hline \end{array} \quad \begin{array}{r} 33 \\ + 2 \\ \hline \end{array} \quad \begin{array}{r} 43 \\ + 2 \\ \hline \end{array}$$

If 2 is added to a number ending in 3, the sum ends in ?.

4. Use the chart to find:

$$\begin{array}{r} 3 + 3 \\ 13 + 3 \\ 23 + 3 \\ 33 + 3 \\ 43 + 3 \end{array} \quad \begin{array}{r} 5 + 2 \\ 15 + 2 \\ 25 + 2 \\ 35 + 2 \\ 45 + 2 \end{array} \quad \begin{array}{r} 4 + 5 \\ 14 + 5 \\ 24 + 5 \\ 34 + 5 \\ 44 + 5 \end{array}$$

5. Mary says the first fact in each column in Ex. 4 is the *key fact* for the other additions in the column. What does she mean?

6. Tell the key fact in finding each of these sums:

$$\begin{array}{r} 24 \\ + 5 \\ \hline \end{array} \quad \begin{array}{r} 16 \\ + 3 \\ \hline \end{array} \quad \begin{array}{r} 27 \\ + 2 \\ \hline \end{array} \quad \begin{array}{r} 54 \\ + 4 \\ \hline \end{array} \quad \begin{array}{r} 84 \\ + 3 \\ \hline \end{array}$$

7. Sue wants a 25-cent game and a 3-cent puzzle. She needs ?¢ in all.

Add 1 to each of the numbers below:

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>
1.	1	11	21	31	41	91	51	81	71
2.	2	12	22	32	42	52	62	72	82
3.	3	23	43	63	86	13	55	96	30
4.	4	14	54	75	26	84	45	36	60

5. Add 2 to each of the numbers in Exs. 1 to 4; add 3.

Add 5 to each of the numbers below; add 4.

6.	1	13	34	22	11	73	92	84	53
7.	3	61	12	51	74	82	33	42	14

Add down. Check by adding up. Write your answers on folded paper.

8.	5	7	6	7	6	7	4	6	5
	6	7	8	6	5	4	6	7	8
	<u>8</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>7</u>	<u>8</u>	<u>8</u>	<u>5</u>	<u>4</u>
9.	4	7	5	8	6	3	2	5	9
	9	4	9	5	6	7	8	9	5
	<u>3</u>	<u>6</u>	<u>4</u>	<u>6</u>	<u>7</u>	<u>7</u>	<u>5</u>	<u>4</u>	<u>5</u>

Write in columns. Add and check.

10. $3 + 8 + 5$

$7 + 4 + 8$

$7 + 7 + 5$

11. $8 + 6 + 5$

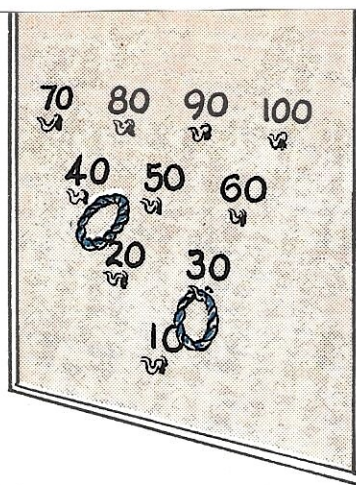
$8 + 3 + 7$

$6 + 6 + 5$

12. In a game of ring toss Peter won 5, 6, and 7 points. In all, he won ? points.

13. Find the cost of a 5-cent balloon, an 8-cent ice-cream cone, and a 6-cent candy bar.

14. Find the cost of two 3-cent stamps and a 1-cent stamp.



Adding

tens

1. Patsy and Jim are playing a game of ring toss. If Patsy gets a ring on hooks 30 and 50, what is her score?

2. Jim got a ring on hooks 70 and 30. Do these additions both show how to find his score? Which way do you like better?

$70 = 7 \text{ tens}$	70
$30 = 3 \text{ tens}$	$+ 30$
$10 \text{ tens} = 100$	100

3. Count by 10's from 100 to 200.

4. $10 \text{ tens} = 100$, so $11 \text{ tens} = ?$, and $12 \text{ tens} = ?$.

5. $13 \text{ tens} = ?$ $15 \text{ tens} = ?$ $17 \text{ tens} = ?$

6. $14 \text{ tens} = ?$ $16 \text{ tens} = ?$ $18 \text{ tens} = ?$

7. Patsy threw a ring on hooks 50 and 70. Do these additions both show how to find her score? Which way do you like better?

$50 = 5 \text{ tens}$	50
$70 = 7 \text{ tens}$	$+ 70$
$12 \text{ tens} = 120$	120

8. Who made the highest score below?

Jane	Bob	Tom	Polly	Sue	John
70	90	60	60	80	70
40	30	80	60	50	60

Find the sums and check:

- | | | | | | | | |
|----|---|---|---|---|---|---|---|
| 1. | $\begin{array}{r} 60 \\ \underline{50} \end{array}$ | $\begin{array}{r} 90 \\ \underline{40} \end{array}$ | $\begin{array}{r} 60 \\ \underline{80} \end{array}$ | $\begin{array}{r} 50 \\ \underline{50} \end{array}$ | $\begin{array}{r} 50 \\ \underline{70} \end{array}$ | $\begin{array}{r} 90 \\ \underline{50} \end{array}$ | $\begin{array}{r} 30 \\ \underline{90} \end{array}$ |
| 2. | $\begin{array}{r} 40 \\ \underline{80} \end{array}$ | $\begin{array}{r} 70 \\ \underline{60} \end{array}$ | $\begin{array}{r} 80 \\ \underline{30} \end{array}$ | $\begin{array}{r} 70 \\ \underline{70} \end{array}$ | $\begin{array}{r} 50 \\ \underline{80} \end{array}$ | $\begin{array}{r} 70 \\ \underline{40} \end{array}$ | $\begin{array}{r} 60 \\ \underline{60} \end{array}$ |

3. Their teacher asked Mary Lu and Dan to find the sum of 62 and 74. Here is their work. Explain Mary Lu's work; Dan's work. Whose way do you like better?

Mary Lu
 62 → 6 tens and 2 ones
 74 → 7 tens and 4 ones

 13 tens and 6 ones = 136

Dan
 $\begin{array}{r} 62 \\ + 74 \\ \hline 136 \end{array}$

Find the sums and check. Use Dan's way of adding.

- | | | | | | | | |
|----|---|---|---|---|---|---|---|
| 4. | $\begin{array}{r} 82 \\ \underline{44} \end{array}$ | $\begin{array}{r} 45 \\ \underline{90} \end{array}$ | $\begin{array}{r} 73 \\ \underline{56} \end{array}$ | $\begin{array}{r} 36 \\ \underline{82} \end{array}$ | $\begin{array}{r} 94 \\ \underline{51} \end{array}$ | $\begin{array}{r} 64 \\ \underline{64} \end{array}$ | $\begin{array}{r} 65 \\ \underline{74} \end{array}$ |
| 5. | $\begin{array}{r} 80 \\ \underline{68} \end{array}$ | $\begin{array}{r} 45 \\ \underline{71} \end{array}$ | $\begin{array}{r} 52 \\ \underline{87} \end{array}$ | $\begin{array}{r} 55 \\ \underline{62} \end{array}$ | $\begin{array}{r} 24 \\ \underline{93} \end{array}$ | $\begin{array}{r} 75 \\ \underline{73} \end{array}$ | $\begin{array}{r} 96 \\ \underline{31} \end{array}$ |

6. Tom gathered 62 shells. Polly gave him 53 more. How many shells did he have then?

7. David collects stamps. He had 74. His uncle gave him 50 more. Then he had ? stamps.

8. There are 85 third-grade children and 63 fourth-grade children. In both grades there are ? children.

Subtracting tens

The Broadway Movie Theater sent 70 free tickets to the Park Street School. There are 120 children in the school. How many children will not get a ticket this time?

To find out, Doris and Bill did these subtractions. Explain each. Whose work do you like better?

Doris

$$\begin{array}{l} 120 \rightarrow 12 \text{ tens} \\ 70 \rightarrow \underline{-7 \text{ tens}} \\ 5 \text{ tens} = 50 \end{array}$$

Bill

$$\begin{array}{r} 120 \\ -70 \\ \hline 50 \end{array}$$

- 13 tens - 6 tens = ? tens. $130 - 60 = \underline{\quad}$.
- 12 tens - 5 tens = ? tens. $120 - 50 = \underline{\quad}$.

Subtract and check:

- | | | | | | | | |
|----|--|--|--|--|--|--|--|
| 3. | $\begin{array}{r} 130 \\ 90 \\ \hline \end{array}$ | $\begin{array}{r} 110 \\ 20 \\ \hline \end{array}$ | $\begin{array}{r} 120 \\ 60 \\ \hline \end{array}$ | $\begin{array}{r} 130 \\ 60 \\ \hline \end{array}$ | $\begin{array}{r} 140 \\ 80 \\ \hline \end{array}$ | $\begin{array}{r} 110 \\ 30 \\ \hline \end{array}$ | $\begin{array}{r} 120 \\ 80 \\ \hline \end{array}$ |
| 4. | $\begin{array}{r} 140 \\ 50 \\ \hline \end{array}$ | $\begin{array}{r} 130 \\ 50 \\ \hline \end{array}$ | $\begin{array}{r} 110 \\ 70 \\ \hline \end{array}$ | $\begin{array}{r} 120 \\ 50 \\ \hline \end{array}$ | $\begin{array}{r} 140 \\ 70 \\ \hline \end{array}$ | $\begin{array}{r} 120 \\ 30 \\ \hline \end{array}$ | $\begin{array}{r} 110 \\ 60 \\ \hline \end{array}$ |

5. Here are 2 ways to subtract 73 from 129. Explain each.

$$\begin{array}{l} 129 = 12 \text{ tens and } 9 \text{ ones} \\ 73 = 7 \text{ tens and } 3 \text{ ones} \\ \hline 5 \text{ tens and } 6 \text{ ones} = 56 \end{array}$$

$$\begin{array}{r} 129 \\ -73 \\ \hline 56 \end{array}$$

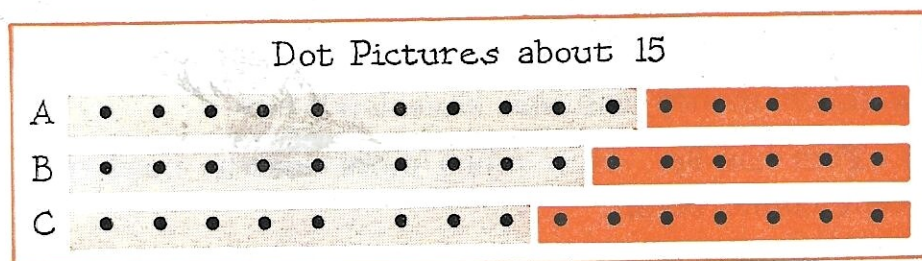
Subtract and check:

- | | | | | | | | |
|----|--|--|--|--|--|--|--|
| 6. | $\begin{array}{r} 145 \\ 93 \\ \hline \end{array}$ | $\begin{array}{r} 124 \\ 62 \\ \hline \end{array}$ | $\begin{array}{r} 135 \\ 61 \\ \hline \end{array}$ | $\begin{array}{r} 116 \\ 70 \\ \hline \end{array}$ | $\begin{array}{r} 139 \\ 46 \\ \hline \end{array}$ | $\begin{array}{r} 148 \\ 73 \\ \hline \end{array}$ | $\begin{array}{r} 127 \\ 34 \\ \hline \end{array}$ |
| 7. | $\begin{array}{r} 136 \\ 75 \\ \hline \end{array}$ | $\begin{array}{r} 117 \\ 57 \\ \hline \end{array}$ | $\begin{array}{r} 132 \\ 81 \\ \hline \end{array}$ | $\begin{array}{r} 123 \\ 52 \\ \hline \end{array}$ | $\begin{array}{r} 104 \\ 64 \\ \hline \end{array}$ | $\begin{array}{r} 147 \\ 82 \\ \hline \end{array}$ | $\begin{array}{r} 129 \\ 83 \\ \hline \end{array}$ |

Facts about 15



1. Don has 2 nickels and 5 pennies. In all, he has ? ¢.
2. Don wants to buy a horn and a ball. How much can he spend for the ball if the horn costs 6¢? 7¢? 8¢? 9¢? Cover coins in the picture to prove each answer.



3. Row A shows that 10 and 5 are ? . How many dots are there in each row?

4. What addition and subtraction facts does Row B teach? Row C? Write the facts. Make a problem for each.

5. $7 + 7 = 14$, so $7 + 8 = ?$ 8. $15 - 10 = 5$, so $15 - 9 = ?$

6. $14 - 9 = 5$, so $15 - 9 = ?$ 9. $15 - 5 = 10$, so $15 - 6 = ?$

7. $15 - 8 = 7$, so $15 - 7 = ?$ 10. $6 + 9 = 15$, so $15 - 9 = ?$

11. $8 + 7 = ?$ $7 + 8 = ?$ $15 - 7 = ?$ $15 - 8 = ?$

12. $9 + 6 = ?$ $6 + 9 = ?$ $15 - 9 = ?$ $15 - 6 = ?$

13. $8 + ? = 15$ $9 + ? = 15$ $6 + ? = 15$ $7 + ? = 15$

$\begin{array}{r} 8 \\ + 7 \\ \hline 15 \end{array}$	$\begin{array}{r} 7 \\ + 8 \\ \hline 15 \end{array}$	$\begin{array}{r} 15 \\ - 8 \\ \hline 7 \end{array}$	$\begin{array}{r} 15 \\ - 7 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ + 6 \\ \hline 15 \end{array}$	$\begin{array}{r} 6 \\ + 9 \\ \hline 15 \end{array}$	$\begin{array}{r} 15 \\ - 9 \\ \hline 6 \end{array}$	$\begin{array}{r} 15 \\ - 6 \\ \hline 9 \end{array}$
--	--	--	--	--	--	--	--



Using facts

about 15

1. Can 2 boys share 15 marbles equally? What is the best they can do?
2. Joan has 3 nickels. If she buys a 6-cent candy bar, how much money will she have left?
3. Tom has 9¢. How much more does he need to buy a 15-cent comic book?
4. If January 8 comes on Monday, the next Monday will be January ? .
5. John has a nickel and 4 pennies. Peter has a nickel and 1 penny. Together they have ? nickels and ? pennies, or ? cents. This shows that $9¢ + 6¢ = \underline{\hspace{1cm}}¢$.

Practice until you can say every answer correctly:

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>
6.	13 - 9 —	14 - 8 —	7 + 8 —	15 - 8 —	7 + 6 —	8 + 7 —	15 - 9 —	13 - 5 —
7.	6 + 8 —	15 - 7 —	9 + 6 —	7 + 7 —	15 - 6 —	9 + 5 —	6 + 9 —	9 + 4 —

8. Write the answers to Exs. 6 and 7 on folded paper. Make Help-Yourself Cards for any facts you do not know. Study your cards. Then write the answers again.

Everyday problems

1. Sam and Mike found a box with 14 pennies in it. If Sam keeps 7¢, Mike will get ? ¢.
2. Tell 4 other ways the boys (Ex. 1) could share the 14¢. Don't give either boy less than 5¢.
3. Bill had 12¢. He spent a nickel. He had ? ¢ left.
4. Marie's doll is 13 inches tall. Lucy's doll is 4 inches taller. Lucy's doll is ? inches tall.
5. Ken had 14 arithmetic examples to do. He has done 6 of them. He has ? more to do.
6. Jane has a nickel and 3 pennies, or ? ¢. Tom has a nickel and 2 pennies, or ? ¢. Together they have ? nickels and ? pennies, or ? ¢.
7. Andy is 8 years old. Betty is 11 years old. How much older is Betty than Andy?
8. Bill wants to buy a 12-cent puzzle. He has only 7¢. He needs ? ¢ more.
9. Ted has 13¢. Ed has 4¢. Ed has ? ¢ less than Ted.
10. Tom had 13¢. He found a nickel. Then he had ? ¢.
11. Dick and Don together bought a box of 15 peppermint candies. If Dick takes 7 pieces, Don can have ? pieces.
12. Lucy's birthday is Dec. 15. On Dec. 8 she said, "One week from today will be my birthday." Was she right?
13. Mike asked for a dozen cookies. The baker gave him 6 nut cookies and 7 sugar cookies. Did the baker give him an extra cooky?

Facts about 16

Edith made paper baskets for the Christmas tree. This is the way she made them:

- She cut 4 large circles from red paper. She drew around a plate to make her circles.

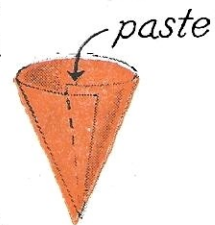
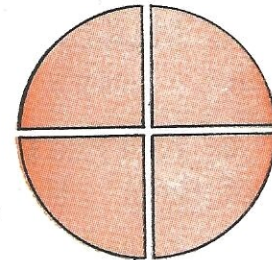
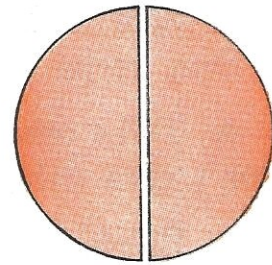
- She folded each circle and cut it into 2 equal parts.

- She folded and cut each half circle into 2 equal parts.

- How many pieces did she have from each circle?

- Each piece of paper had two straight edges. Edith pasted these edges together. Then each piece of paper looked like this: →

- She used a paper clip to hang each basket.



1. How many baskets can Edith make from 1 circle? How many can she make from 2 circles? from 3 circles? from 4 circles?

2. If Edith puts 9 of her 16 baskets on the classroom tree, how many can she take home for her own tree?

$$16 - 9 = 7$$

$$9 + 7 = 16$$

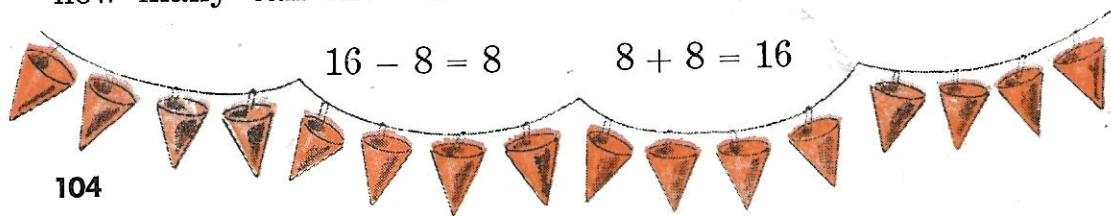
$$16 - 7 = 9$$

$$7 + 9 = 16$$

3. If Edith puts 8 of her baskets on the classroom tree, how many can she take home for her own tree?

$$16 - 8 = 8$$

$$8 + 8 = 16$$



How quickly can you tell the answers in Exs. 4-8?

$$4. \begin{cases} 16 - 7 \\ 16 - 8 \\ 16 - 9 \end{cases} \quad 5. \begin{cases} 16 - 9 \\ 16 - 7 \\ 16 - 8 \end{cases} \quad 6. \begin{cases} 7 + 9 \\ 8 + 8 \\ 9 + 7 \end{cases} \quad 7. \begin{cases} 9 + 7 \\ 15 - 7 \\ 8 + 8 \end{cases} \quad 8. \begin{cases} 8 + 8 \\ 7 + 9 \\ 16 - 7 \end{cases}$$

9. Edith had 3 paper clips. Dick gave her 4 more. Then she had ? clips.

10. When Edith had 7 clips, how many more did she need for her 16 baskets?

11. Ann gave Edith 1 clip. Then she had 7 and 1, or ? clips.

12. When Edith had 8 clips, how many more did she need for her 16 baskets?

13. Edith had 8 clips. Dan gave her 1 more. Then she had ? clips.

14. When Edith had 9 clips, Sally gave her 7 more. Did she have enough then for her 16 baskets?

15. Billy brought to school 5 Christmas-tree balls, Ann brought 4 balls, and Jack brought 7 balls. Together they brought ? balls.

16. Ted brought 2 strings of Christmas-tree lights. There were 8 lights on each string. That was ? lights.

Practice until you can say every answer correctly:

$$17. \begin{array}{r} 16 \\ - 7 \end{array} \quad \begin{array}{r} 8 \\ + 8 \end{array} \quad \begin{array}{r} 16 \\ - 9 \end{array} \quad \begin{array}{r} 9 \\ + 5 \end{array} \quad \begin{array}{r} 7 \\ + 9 \end{array} \quad \begin{array}{r} 16 \\ - 8 \end{array} \quad \begin{array}{r} 6 \\ + 7 \end{array} \quad \begin{array}{r} 9 \\ + 7 \end{array}$$

18. Write the answers to Ex. 17 on folded paper. Make Help-Yourself Cards for any facts you do not know. Study your cards. Then write the answers again.

Facts about 17

1. Alice and Tom found 10 paper stars in one box and 7 stars in another. All together they had ? stars.

2. Alice said, "If we had 16 stars, we could divide the stars equally. We could put 8 stars on one poster and 8 on the other." Do you agree with Alice?

3. Tom said, "Well, we have 17 stars, so we can't divide them equally. We shall do the best we can. We'll put 9 stars on one poster and 8 on the other." Do you agree with Tom? $17 - 9 = ?$.

4. Four of the 17 stars are red. Four are blue. The other ? stars are green. $17 - 8 = ?$.

5. $8 + 8 = 16$, so $8 + 9 = ?$. Why?

6. $17 - 10 = 7$, so $17 - 9 = ?$. Why?

7. $16 - 8 = 8$, so $17 - 8 = ?$. Why?

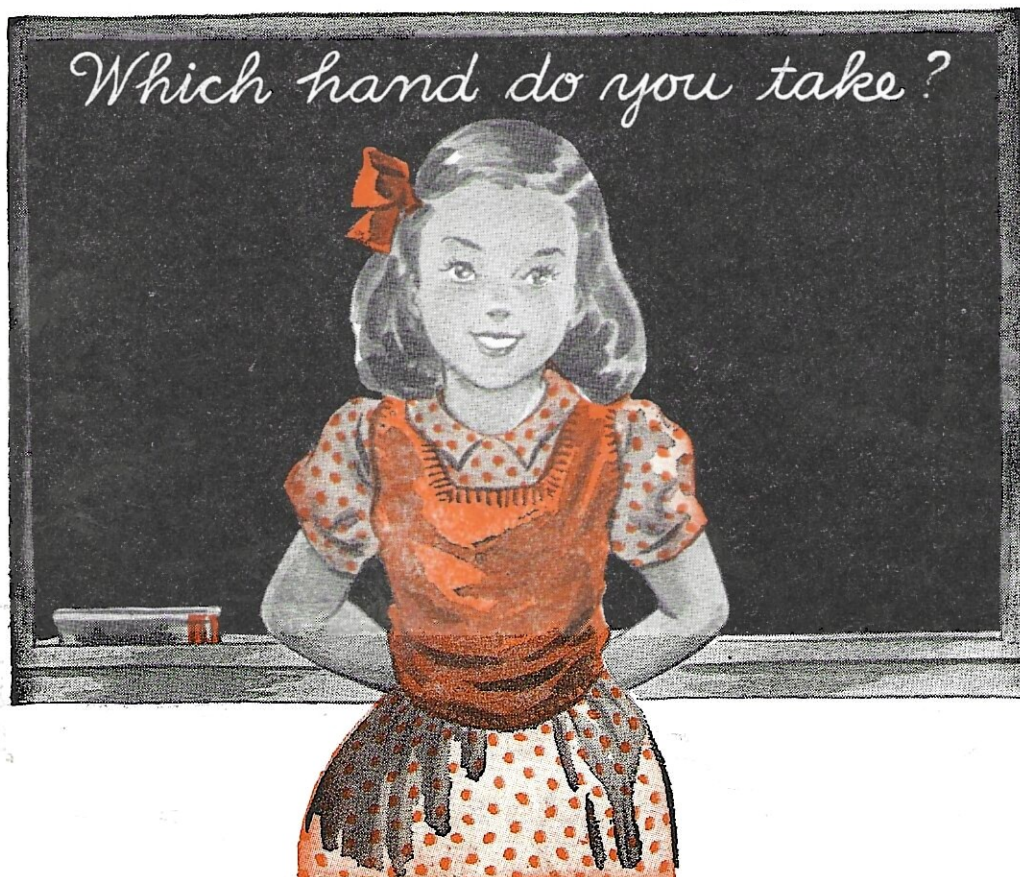
8. Jane has a nickel and 3 pennies, or ?¢. Tom has a nickel and 4 pennies, or ?¢. Together they have ? nickels and ? pennies, or ?¢. $8¢ + 9¢ = ?¢$.

$$\begin{array}{rcl} 8 + 9 & = & 17 \\ 9 + 8 & = & 17 \end{array} \qquad \begin{array}{rcl} 17 - 8 & = & 9 \\ 17 - 9 & = & 8 \end{array}$$

Practice until you can say every answer correctly:

9. $\begin{array}{r} 9 \\ + 8 \end{array}$ $\begin{array}{r} 17 \\ - 9 \end{array}$ $\begin{array}{r} 14 \\ - 6 \end{array}$ $\begin{array}{r} 8 \\ + 8 \end{array}$ $\begin{array}{r} 15 \\ - 9 \end{array}$ $\begin{array}{r} 13 \\ - 4 \end{array}$ $\begin{array}{r} 8 \\ + 9 \end{array}$ $\begin{array}{r} 17 \\ - 8 \end{array}$

10. Write the answers to Ex. 9 on folded paper. Make Help-Yourself Cards for any facts you do not know. Study your cards. Then write the answers again.



This is Mary Lu. She says, "I have $9 + 6$ jelly beans in my right hand. I have $6 + 8$ jelly beans in my left hand. Which hand do you take?"

Which hand do you take in each of these?

NUMBER OF JELLY BEANS IN

RIGHT HAND

LEFT HAND

1. $12 - 5$

$14 - 6$

2. $8 + 9$

$9 + 7$

3. $15 - 7$

$12 - 3$

4. $8 + 8$

$6 + 9$

5. $6 + 7$

$4 + 8$

NUMBER OF JELLY BEANS IN

RIGHT HAND

LEFT HAND

6. $13 - 9$

$11 - 5$

7. $18 - 9$

$16 - 8$

8. $13 - 5$

$17 - 8$

9. $7 + 4$

$3 + 9$

10. $12 - 4$

$14 - 5$

Facts about 18

1. Lucy and Ben bought a box of chocolate drops. They wanted to share the candies equally. Ben placed the candies as shown here. How many candies are in the top row? in the bottom row? in both rows together?



2. Ben said, "If I move the last candy from the top row into the bottom row, there will be ? candies in each row. That shows if we share 18 candies equally we each get 9 candies."

3. Ben's candies show that $9 + 9 = \underline{\quad}$; $18 - 9 = \underline{\quad}$; two 9's = ?.

4. $8 + 9 = 17$, so $9 + 9 = \underline{\quad}$ 5. $17 - 9 = 8$, so $18 - 9 = \underline{\quad}$

$$9 + 9 = 18 \qquad 18 - 9 = 9$$

Practice until you can say every answer correctly:

6. $\begin{array}{r} 15 \\ - 9 \end{array}$ $\begin{array}{r} 9 \\ + 8 \end{array}$ $\begin{array}{r} 16 \\ - 8 \end{array}$ $\begin{array}{r} 9 \\ + 9 \end{array}$ $\begin{array}{r} 17 \\ - 9 \end{array}$ $\begin{array}{r} 7 \\ + 8 \end{array}$ $\begin{array}{r} 18 \\ - 9 \end{array}$ $\begin{array}{r} 15 \\ - 6 \end{array}$

7. Write the answers to Ex. 6 on folded paper. Make Help-Yourself Cards for any facts you do not know. Study your cards. Then write the answers again.

8. $\begin{array}{r} 54 \\ + 63 \end{array}$ $\begin{array}{r} 98 \\ + 31 \end{array}$ $\begin{array}{r} 73 \\ + 62 \end{array}$ $\begin{array}{r} 56 \\ + 73 \end{array}$ $\begin{array}{r} 84 \\ + 64 \end{array}$ $\begin{array}{r} 75 \\ + 42 \end{array}$ $\begin{array}{r} 44 \\ + 95 \end{array}$

9. $\begin{array}{r} 119 \\ - 25 \end{array}$ $\begin{array}{r} 148 \\ - 74 \end{array}$ $\begin{array}{r} 127 \\ - 46 \end{array}$ $\begin{array}{r} 137 \\ - 50 \end{array}$ $\begin{array}{r} 118 \\ - 82 \end{array}$ $\begin{array}{r} 148 \\ - 93 \end{array}$ $\begin{array}{r} 129 \\ - 67 \end{array}$

Playing Push-Over



The boys and girls in Miss Bell's class like to play this game of Push-Over. A player pushes 3 wooden blocks each time he has a turn.

Bill has just had a turn. His blocks landed on 8, 9, and "outside." His score is $8 + 9 + 0$, or $\underline{\quad ? \quad}$.

What scores did each of these children make?

Jack	8, 7, outside	Alice	10, outside, 10 off
Tom	7, outside, 10	Molly	7, 9, 10
Jean	outside, 9, 7	Sam	8, 8, 10 off
Nancy	8, 10, outside	Peter	10, 10, 7
Billy	7, 8, 10	Sue	7, 7, 10 off
Ted	9, 8, 10 off	Betty	9, 9, 10

Test on addition facts

Tell the answers to these addition examples. Then write the answers on folded paper in 5 minutes. Make Help-Yourself Cards for any facts you do not know. You can find the correct answers on page 309. Study your cards. Then write the answers again.

1. $\begin{array}{r} 7 \\ 1 \end{array}$ $\begin{array}{r} 2 \\ 9 \end{array}$ $\begin{array}{r} 2 \\ 5 \end{array}$ $\begin{array}{r} 2 \\ 8 \end{array}$ $\begin{array}{r} 4 \\ 4 \end{array}$ $\begin{array}{r} 4 \\ 1 \end{array}$ $\begin{array}{r} 3 \\ 1 \end{array}$ $\begin{array}{r} 7 \\ 7 \end{array}$ $\begin{array}{r} 6 \\ 1 \end{array}$ $\begin{array}{r} 5 \\ 4 \end{array}$

2. $\begin{array}{r} 3 \\ 3 \end{array}$ $\begin{array}{r} 1 \\ 1 \end{array}$ $\begin{array}{r} 9 \\ 2 \end{array}$ $\begin{array}{r} 1 \\ 7 \end{array}$ $\begin{array}{r} 2 \\ 1 \end{array}$ $\begin{array}{r} 2 \\ 2 \end{array}$ $\begin{array}{r} 5 \\ 5 \end{array}$ $\begin{array}{r} 7 \\ 2 \end{array}$ $\begin{array}{r} 6 \\ 2 \end{array}$ $\begin{array}{r} 3 \\ 6 \end{array}$

3. $\begin{array}{r} 2 \\ 4 \end{array}$ $\begin{array}{r} 4 \\ 5 \end{array}$ $\begin{array}{r} 8 \\ 2 \end{array}$ $\begin{array}{r} 6 \\ 4 \end{array}$ $\begin{array}{r} 9 \\ 1 \end{array}$ $\begin{array}{r} 6 \\ 6 \end{array}$ $\begin{array}{r} 3 \\ 2 \end{array}$ $\begin{array}{r} 2 \\ 6 \end{array}$ $\begin{array}{r} 9 \\ 3 \end{array}$ $\begin{array}{r} 6 \\ 5 \end{array}$

4. $\begin{array}{r} 3 \\ 8 \end{array}$ $\begin{array}{r} 3 \\ 4 \end{array}$ $\begin{array}{r} 3 \\ 9 \end{array}$ $\begin{array}{r} 7 \\ 3 \end{array}$ $\begin{array}{r} 2 \\ 7 \end{array}$ $\begin{array}{r} 8 \\ 4 \end{array}$ $\begin{array}{r} 4 \\ 8 \end{array}$ $\begin{array}{r} 5 \\ 2 \end{array}$ $\begin{array}{r} 5 \\ 1 \end{array}$ $\begin{array}{r} 8 \\ 5 \end{array}$

5. $\begin{array}{r} 7 \\ 9 \end{array}$ $\begin{array}{r} 5 \\ 8 \end{array}$ $\begin{array}{r} 5 \\ 7 \end{array}$ $\begin{array}{r} 7 \\ 8 \end{array}$ $\begin{array}{r} 8 \\ 7 \end{array}$ $\begin{array}{r} 9 \\ 6 \end{array}$ $\begin{array}{r} 5 \\ 9 \end{array}$ $\begin{array}{r} 8 \\ 9 \end{array}$ $\begin{array}{r} 8 \\ 6 \end{array}$ $\begin{array}{r} 9 \\ 5 \end{array}$

6. $\begin{array}{r} 9 \\ 4 \end{array}$ $\begin{array}{r} 6 \\ 7 \end{array}$ $\begin{array}{r} 5 \\ 6 \end{array}$ $\begin{array}{r} 4 \\ 6 \end{array}$ $\begin{array}{r} 7 \\ 6 \end{array}$ $\begin{array}{r} 1 \\ 8 \end{array}$ $\begin{array}{r} 9 \\ 9 \end{array}$ $\begin{array}{r} 1 \\ 2 \end{array}$ $\begin{array}{r} 5 \\ 3 \end{array}$ $\begin{array}{r} 1 \\ 5 \end{array}$

7. $\begin{array}{r} 8 \\ 8 \end{array}$ $\begin{array}{r} 1 \\ 3 \end{array}$ $\begin{array}{r} 2 \\ 3 \end{array}$ $\begin{array}{r} 6 \\ 8 \end{array}$ $\begin{array}{r} 6 \\ 9 \end{array}$ $\begin{array}{r} 3 \\ 5 \end{array}$ $\begin{array}{r} 6 \\ 3 \end{array}$ $\begin{array}{r} 1 \\ 9 \end{array}$ $\begin{array}{r} 8 \\ 1 \end{array}$ $\begin{array}{r} 9 \\ 8 \end{array}$

8. $\begin{array}{r} 3 \\ 7 \end{array}$ $\begin{array}{r} 4 \\ 7 \end{array}$ $\begin{array}{r} 4 \\ 2 \end{array}$ $\begin{array}{r} 8 \\ 3 \end{array}$ $\begin{array}{r} 7 \\ 5 \end{array}$ $\begin{array}{r} 4 \\ 9 \end{array}$ $\begin{array}{r} 7 \\ 4 \end{array}$ $\begin{array}{r} 9 \\ 7 \end{array}$ $\begin{array}{r} 4 \\ 3 \end{array}$ $\begin{array}{r} 1 \\ 6 \end{array}$

Test on subtraction facts

Tell the answers. Then write the answers on folded paper in 5 minutes. Make Help-Yourself Cards for any facts you do not know. You can find the correct answers on page 310. Study your cards. Then write the answers again.

1. $\begin{array}{r} 3 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 12 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ -1 \\ \hline \end{array}$

2. $\begin{array}{r} 12 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 15 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 14 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 12 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 12 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 11 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 11 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 13 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ -4 \\ \hline \end{array}$

3. $\begin{array}{r} 12 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 16 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 14 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ -6 \\ \hline \end{array}$

4. $\begin{array}{r} 13 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 11 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 14 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 14 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$

5. $\begin{array}{r} 16 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 18 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 11 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 11 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 2 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ -3 \\ \hline \end{array}$

6. $\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 1 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ -3 \\ \hline \end{array}$

7. $\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 14 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 13 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 15 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 17 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 15 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 13 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 13 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 16 \\ -7 \\ \hline \end{array}$

8. $\begin{array}{r} 10 \\ -1 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -2 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 11 \\ -5 \\ \hline \end{array}$ $\begin{array}{r} 11 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ -2 \\ \hline \end{array}$

9. $\begin{array}{r} 11 \\ -7 \\ \hline \end{array}$ $\begin{array}{r} 13 \\ -6 \\ \hline \end{array}$ $\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 12 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ -4 \\ \hline \end{array}$ $\begin{array}{r} 12 \\ -8 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ -3 \\ \hline \end{array}$ $\begin{array}{r} 10 \\ -9 \\ \hline \end{array}$ $\begin{array}{r} 2 \\ -2 \\ \hline \end{array}$

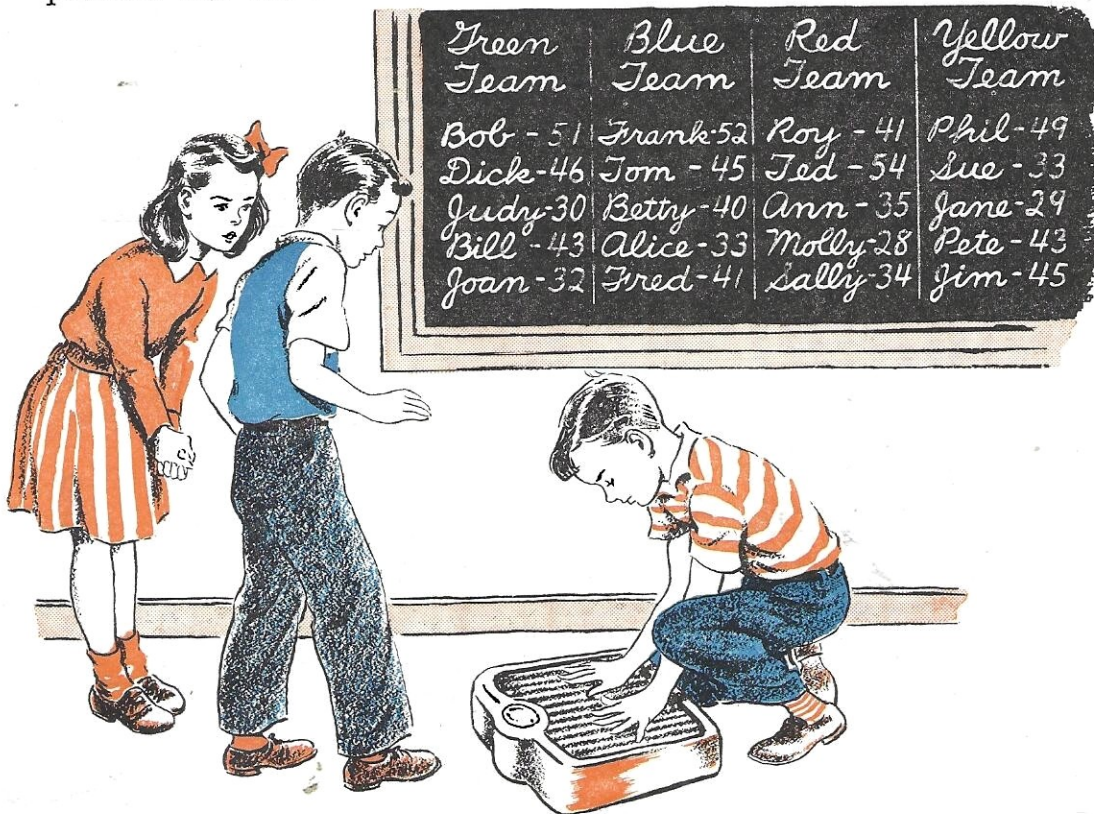
A class party

1. Miss Hand's pupils had a party. They served an ice-cream cone to each child. Try to find out how much money the class needed for the ice-cream cones. These facts will help you.

- There were 20 children at the party.
- Empty cones cost 1¢.
- A quart of ice cream fills 10 cones.
- The ice cream costs \$.60 a quart.

2. At the party the boys and girls divided into 4 teams. Look at the picture. How many children were on each team? Did all 20 children play?

Each child took a turn pushing down on scales as hard as he could. Bob pushed so hard the hand on the scale moved to show 51 pounds. Which child on each team pushed the hardest?



Make Sensible Sentences

1. tens three is four Forty-three and
2. quarter nickels a Five equal.
3. pints equals quart two One:
4. feet three yard in are There a.
5. foot twelve One inches equals.
6. There thirty-six are yard in a inches



3. The children played a Sensible Sentences game at the party. Billy won. He made 6 sensible sentences out of the words on the board. It took him 3 minutes. Can you do it as fast as Billy did?

4. Miss Hand asked the class these number riddles at the party. Can you answer them?

- What has 3 feet but can't walk?
- Tom thought of the number 7. He added a number to it. His answer was 7. What number did Tom add to the 7?
- Jack thought of the number 8. He subtracted a number from it. His answer was 8. What number did he subtract from the 8?
- Ted thought of a number. He took 8 away and had 9 left. What number did he think of?
- Mary thought of a number. She took 9 away from it and had 6 left. What was the number?

Problem Test 3

1. Ned is reading *The Brave Cowboy*. He is ready to start Chapter VIII. How many chapters has he read?

2. Jane ironed 9 white handkerchiefs and 6 colored ones. How many did she iron?

3. Ellen is sending 16 invitations. She has written 9. She has ? more to write.

4. Bob sold 4 tickets on Monday, 3 on Tuesday, and 6 on Thursday. How many did he sell in all?

5. At 6 A.M. the temperature was 32°. At 8 A.M. it was 48°. How much did it rise in 2 hours?

6. John's father went to take a nap. He asked John to call him in 20 minutes. John looked at the clock. It was 10 minutes after 3. At what time should John wake his father?

7. Sally sold a box of cookies for 40¢. Mrs. Smith gave Sally \$1.00. Sally gave Mrs. Smith ? dimes in change.

8. Jane had a quarter. She earned 4¢ more. How much money did she have then?

9. Bob is saving his money to buy a football. He has a dollar bill, 8 dimes, and 5 pennies. How much money has he all together? Write the answer. Use a dollar sign and cents point.

10. John had 64 savings stamps. His uncle gave him 55 more. How many did he have then?

Get your Problem Test Record out of your Arithmetic Folder. Write on it your score on this test.

Self-Help Test 3

Copy, find the answers, and check:

1. $\begin{array}{r} 75 \\ + 24 \\ \hline \end{array}$ (46) 2. $\begin{array}{r} 67 \\ + 72 \\ \hline \end{array}$ (99) 3. $\begin{array}{r} 94 \\ - 63 \\ \hline \end{array}$ (48) 4. $\begin{array}{r} 128 \\ - 63 \\ \hline \end{array}$ (100) 5. $\begin{array}{r} 140 \\ - 80 \\ \hline \end{array}$ (100)

6. $4¢ + 2¢ + 3¢$ (52)

7. $8 + 7 + 4$ (97)

8. $572 = \underline{\quad} \text{ hundreds, } \underline{\quad} \text{ tens, } \underline{\quad} \text{ ones.}$ (70)

9. Six boys need 6 pennies to be weighed. They have a dime and 5 pennies. How much will they have to use out of the dime? How many cents will they have left? (101)

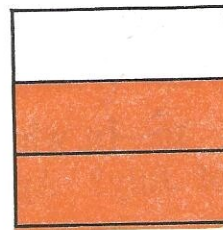
Self-Help Test 4

1. What part of this square is white? (11)

2. Write with dollar sign and cents point: four dollars and forty-nine cents. (73)

3. Write these Roman numbers in figures:

V X III XII IV VIII IX (66)



4. Jean is buying a 10-cent ice-cream cone. How much change should she receive from a half dollar? (57)

5. Tom has a piece of wood a foot long. He wishes to make a boat 9 in. long. His wood is $\underline{\quad}$ inches too long. (79)

6. At 9 o'clock the thermometer read 16° . At 10 o'clock it read 9° . In one hour the temperature fell $\underline{\quad}$ degrees. (63)

7. $1 \text{ yd.} = \underline{\quad} \text{ in.}$ (25)

10. $1 \text{ wk.} = \underline{\quad} \text{ da.}$ (83)

8. $1 \text{ yd.} = \underline{\quad} \text{ ft.}$ (25)

11. $1 \text{ qt.} = \underline{\quad} \text{ pt.}$ (28)

9. $1 \text{ yr.} = \underline{\quad} \text{ mo.}$ (26)

12. $1 \text{ hr.} = \underline{\quad} \text{ min.}$ (3)

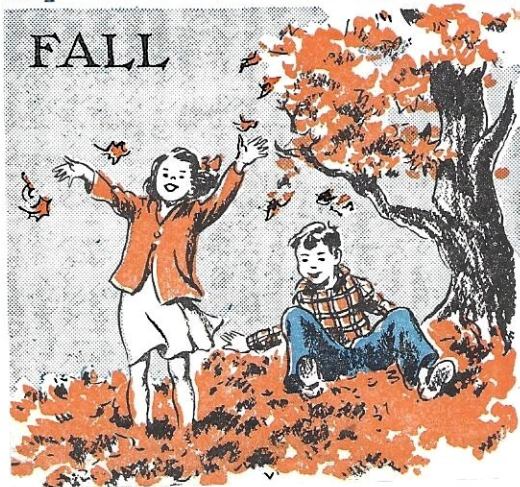
A new year begins

Look at your calendar for the new year.

1. What year is this? What does New Year's Day mean?
2. What is the first month of the year? the last?
3. How many months are there in a year? Name them.
4. How many days are there in a week? Name them.
5. How many days are there in January? June? May?
6. How many Sundays are there in January this year?
On what days of the month do these Sundays come?
7. On what day of the week does the 10th of January come? the 16th? the 21st? the 31st?
8. In what months do you have summer vacation?
9. Look at the pictures below. Name the 4 seasons of the year. Name the months in each season.
10. In what season does New Year's Day come? Fourth of July? April Fools' Day? Halloween?
11. Make a drawing for your folder about the 4 seasons of the year. Your drawing should show: (1) the names of the seasons; (2) something you like to do in each season.

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September • October • November



December • January • February



Kate's little sister, Carol, was born on January 15, 1950. January 15, 1950 is the date of Carol's birth.

Notice that a date has three parts: *the month, the day of the month, and the year.*

1. Tell what date it is today. Name the month, the day of the month, and the year. Write the date. Be sure to place a comma after the day of the month.

2. What date is a week from today? Write it.

3. What date is next Saturday? a week from next Saturday? Write the dates.

4. On January 8, Judy said, "I can tell what date is a week from today without looking at the calendar." How can she do that?

5. On what day of the week do these days come this year? In what season does each come?

New Year's Day (Jan. 1)

Fourth of July (July 4)

Valentine's Day (Feb. 14)

Columbus Day (Oct. 12)

Flag Day (June 14)

Christmas Day (Dec. 25)

6. Thanksgiving Day is the fourth Thursday in November. In what season does it come? On what day of the month does it come this year?

March • April • May

SPRING



June • July • August

SUMMER



Problems without numbers

Tell whether the missing word in each example is *add* or *subtract*.

1. Bob wants to buy a ball and a bat. You know the cost of each. To find the cost of both, you ? .
2. You know how much money Tom had, and how much he spent. To find how much he has left, you ? .
3. You know how much money Ann has. You know how much Sue has. To find how much more Ann has than Sue, you ? .
4. You know the cost of the pencil, the notebook, and the crayons Jean bought. To find how much they cost all together, you ? .
5. You know how much money Jim has. You know how much skates cost. To find how much more money Jim needs to buy the skates, you ? .
6. You know how many children are in class. You know how many pencils your teacher has. To find how many more are needed for each child to have one, you ? .
7. You know how old Polly is. You know how old Bob is. To find how much younger Polly is than Bob, you ? .
8. You know how many boys are in your class, and how many girls. To find the number of children, you ? .
9. You know how many pretzels you had. You know how many are left. To find how many you ate, you ? .
10. You know how much a comic book costs. You know how much money you have. To find how much more you must get before you can buy the book, you ? .

Put on your thinking cap



► Oral review

1. What kinds of things do you buy by the yard? by the quart?
2. Jane knows that $8 + 7 = 15$. Then she should also know that $15 - 7 = \underline{\quad}$; $15 - 8 = \underline{\quad}$.
3. Read these temperatures: 32° 68° 0° 72°
4. Jack has a yardstick. How can he use it to measure off a stick 1 ft. long? 2 ft. long? 3 ft. long?
5. How many nickels are there in a dime? a quarter? a half dollar? a dollar?
6. Read these: 5¢ \$0.05 \$3.10 \$1.01 \$12.25
7. Beginning with 5, count by 10's to 95.
8. $8 + 6$ is as much as $10 + \underline{\quad}$.
9. Tell the sum of 4, 5, 3, and 6.
10. Read these: 745 608 IV VII XI

► Written review

Check your answers to these examples:

- | | | | | |
|--|--|--|---|--|
| 1. $\begin{array}{r} 64 \\ + 32 \\ \hline \end{array}$ | 2. $\begin{array}{r} 75 \\ + 63 \\ \hline \end{array}$ | 3. $\begin{array}{r} 59 \\ - 23 \\ \hline \end{array}$ | 4. $\begin{array}{r} 106 \\ - 42 \\ \hline \end{array}$ | 5. $\begin{array}{r} 85 \\ - 30 \\ \hline \end{array}$ |
|--|--|--|---|--|

6. Sue is going to the museum. She needs 20¢ for bus fare and 60¢ for lunch. In all, she needs $\underline{\quad}$ ¢.
7. In one whole there are $\underline{\quad}$ fourths.
8. How much change will Bob get from a quarter if he spends 14¢?

